

CANADIAN PUBLIC HEALTH JOURNAL

VOL. 31, NO. 6



JUNE, 1940

The Post-Sanatorium Care of Tuberculous Patients in Ontario

C. A. WICKS, B.A., M.D.

*Division of Tuberculosis Prevention
Department of Health of Ontario, Toronto*

IF we are to consider post-sanatorium care of the tuberculous in its broadest aspects, our subject reaches rather ponderous proportions. Such care involves many branches of social welfare and calls for correlation between the activities of many and varied organizations. Certain of these services are now provided by regulations or statutes, others are purely voluntary, and others are yet to be developed. It is safe to say that, almost universally, facilities for the after-care and rehabilitation of tuberculous persons have lagged far behind the development of diagnostic and sanatorium treatment facilities. Important as are diagnosis and sanatorium treatment in tuberculosis, much of their benefits to individuals and society will be wasted if proper care and supervision are not provided for those who have been discharged from sanatoria.

In this presentation, it will be possible only to touch briefly upon the importance of after-care, to outline the arrangements now in effect in Ontario, and to mention certain observations in regard to the operation of this relatively new departure in this province.

That whole-hearted attention and action are required upon this problem is evident from the findings of follow-up studies from patients discharged from sanatoria. Many such studies have been made, but unfortunately only a small number actually show the probable situation as it exists here in Canada within relatively recent times.

Table I was prepared from a study by Dr. G. J. Wherrett in 1931 of over 2,000 tuberculous patients discharged from sanatorium in Saskatchewan (1). The seriousness of the problem will be evident from the following facts deduced from that table:

TABLE I
CONDITION OF TUBERCULOUS PATIENTS FOLLOWING DISCHARGE FROM SANATORIUM
(according to interval after discharge)

No. of years after discharge	Percentage of those discharged alive				
	"Well and working"	"Symptoms and light work"	"Unable to work"	"Unheard from"	Died
1	38%	24%	25%	5%	8%
2	42%	15%	21%	7%	14%
3	45%	9%	20%	6%	20%
4	45%	11%	7%	5%	32%
5	39%	10%	13%	3%	34%
6	37%	8%	7%	6%	42%
7	37%	3%	9%	7%	44%
8	31%	6%	7%	11%	44%
9	31%	6%	9%	6%	48%
10	32%	4%	7%	4%	52%

- (a) More than one-half of those persons discharged from sanatoria had died within 10 years after discharge.
- (b) The death rate among ex-patients of sanatoria is greatest during the first 5 or 6 years after discharge.
- (c) Only 39 per cent. of those persons discharged from sanatoria were classed as "well and working" 5 years after discharge. This number apparently decreased as the interval after discharge increased beyond that period.

From table II we see that the eventual outlook and usefulness of the ex-sanatorium patient depend very definitely upon the extent of the disease at the time of admission to sanatorium. As might be expected, cases with min-

TABLE II
CONDITION OF TUBERCULOUS PATIENTS 1 TO 13 YEARS AFTER DISCHARGE FROM SANATORIUM
(according to extent of disease on admission to sanatorium)

Classification on admission	Percentage of those discharged alive				
	"Well and working"	"Symptoms and light work"	"Unable to work"	"Unheard from"	Died
(a) Negative sputum:					
Minimal.....	66%	10%	9%	5%	9%
Mod. Adv.....	57%	13%	6%	9%	15%
Far Adv.....	41%	11%	11%	7%	30%
b) Positive sputum:					
Minimal.....	63%	5%	8%	11%	13%
Mod. Adv.....	31%	13%	15%	3%	38%
Far Adv.....	11%	8%	18%	3%	60%

imal pulmonary tuberculosis have a much better outlook than those with far advanced disease, and those with negative sputum show a better eventual result than those with positive sputum even with the same amount of disease.

Table III shows the results of a study made by Dr. G. J. Wherrett in 1931 as to the cause of ex-sanatorium patients suffering a relapse of their disease after discharge from sanatorium.

TABLE III
CAUSES OF RELAPSE (breaking-down of quiescent disease)
IN PATIENTS DISCHARGED FROM SANATORIUM

Causes	Cases in which the cause applied	
	Number	Per cent. of total
Overwork	59	29%
Insufficient treatment originally	40	19%
Unexplainable (everything seemed favourable)	29	14%
Intercurrent disease	23	11%
Unhygienic living conditions	21	11%
Indiscretions in recreation or morals	20	10%
Unknown (no information available)	18	9%
Concurrent disease	9	4%
Unhygienic working conditions	2	1%
Operative procedures	2	1%
Mental factor	1

Table IV was prepared from a more recent study made in 1938 upon 230 patients discharged three to five years previously from the Queen Alexandra Sanatorium, London (2). From this table we see that at least 20 per cent. of the patients discharged from the sanatorium had died within 5 years after discharge; and that less than one-third of the ex-patients could be classed as "well and working full time" 5 years after discharge.

TABLE IV
CONDITION OF TUBERCULOUS PATIENTS FOLLOWING DISCHARGE FROM SANATORIUM
(according to interval after discharge)

No. of years after discharge	Percentage of those discharged alive			
	"Well and working full time"	"Working part time"	"Home and house routine"	Died
3	31%	33%	23%	12%
4	36%	34%	16%	14%
5	30%	23%	26%	21%

That many patients have lacked proper medical supervision of their condition after discharge from sanatorium is evidenced from the following facts obtained in a survey of patients 3 to 5 years after discharge from the Queen Alexandra Sanatorium: (a) 61 per cent. reported that they were not attending any chest clinic; (b) 30 per cent. reported as having had no sputum examination since discharge; (c) 26 per cent. reported as having had no chest x-ray since discharge.

Hastings and Doerr report a detailed follow-up study of patients discharged from sanatoria in Minnesota (3). Among 1,213 patients discharged from sanatoria between 1926 and 1935 they showed that the mortality risks during the first five years after discharge when corrected for age differences were as follows: Ex-patients with minimal pulmonary tuberculosis suffered a mortality rate of 1.5 times the expected rate. The ratios of actual to expected deaths for those ex-patients with moderately advanced and far advanced disease were 4.0 and 7.4 respectively.

In that study it was also shown that the life expectancy was considerably better in those cases where the tuberculosis on "discharge" from sanatorium was arrested, apparently arrested or quiescent than in those where the disease on "discharge" was merely improved or unimproved. Although no figures could be obtained where a distinction was made between those discharged with and without medical consent, one is naturally led to believe that a considerable percentage of the poor eventual results have occurred among those persons who "left against medical advice".

Probably enough has been mentioned to indicate the importance of post-sanatorium care and the too-frequent lack or inadequacy of such care.

The literature contains many references to such subjects as "after-care", "post-sanatorium care", "rehabilitation of the tuberculous", etc., but most of these references are to schemes which have been developed in Europe to care for the ex-patient with far-advanced tuberculosis and continuing positive sputum, where return to the community would be undesirable. Such schemes as "Papworth Village" and other similar organizations appear to serve a useful purpose elsewhere, and may be utilized eventually in Canada. If so, they will probably be developed around the sanatoria to allow for segregation of the maximum benefit positive sputum cases under conditions approximating those of normal life. The pressing requirements at the present time in this country are for systematic and organized financial assistance, medical care and greater public understanding for ex-sanatorium patients during the difficult period until they can be re-absorbed into the normal social pattern.

■ Prior to July 1, 1938, in Ontario the municipalities and the Provincial Government contributed toward the cost of treatment of indigent persons in sanatoria. Mothers' Allowance was available for the dependents of a wage earner while in sanatorium and after discharge until he was able to resume work.

There was, however, no province-wide provision beyond "relief" for indigent persons after discharge from sanatoria. Voluntary agencies such as the Samaritan Club and service clubs in certain sections provided extra assistance when needy cases were brought to their attention. Such voluntary contributions toward the problem of after-care were of very considerable value and such organizations must be given a great deal of credit, but the vast majority of tuberculous persons were faced upon discharge from sanatorium with the alternatives of existing upon relief (usually inadequate to provide the required care) or accepting employment of a type and amount for which they were not as yet physically capable. These conditions resulted in many persons remaining in sanatoria at the expense of the taxpayer for a prolonged period until they

could be declared suitable by the medical staff to shift for themselves after discharge. Those "maximum benefit" patients without means of support who did not wish to remain under this "domiciliary" care in sanatorium, left and frequently commenced too strenuous work, resulting in a breaking-down of their disease.

Since July 1, 1938, in Ontario the Provincial Government has assumed the sanatorium maintenance charges formerly borne by the municipalities, but has placed upon the municipalities the responsibility of providing the necessities of life to those patients who are unable to secure such for themselves following discharge from sanatorium.

Table V shows in outline the various procedures which are now established in Ontario in respect to the organization for the provision of "after-care" to ex-sanatorium patients.

In further explanation it might be mentioned that the Sanatoria for Consumptives Act specifies that "the Local Board of Health shall furnish to or for any patient declared suitable to receive care or treatment outside the sanatorium and who is indigent, the expenses of (a) transportation from the sanatorium to the place of residence of the patient; (b) proper living accommodation, food, clothing and any other necessities of life required by the patient; (c) any special treatment for tuberculosis and transportation to and from any place at which such special treatment is available; (d) or of such of those things and services as he is unable to provide himself".

For example, a married man being discharged from sanatorium to his home where his wife and children are receiving Mothers' Allowance should be provided with complete food allowance, clothing, an allowance toward his lodging, etc. In other words, the municipality is responsible to care for the ex-patient while the Mothers' Allowance is intended only for the support of the wife and children. The average cost of such care would be four dollars per week for each ex-patient. A single man or woman without funds and without relatives being discharged from sanatorium should be supplied with board and lodging in a suitable boarding home, as well as provided with clothing as required, etc. The average cost of such care would be six dollars per week for each ex-patient. A person being discharged from sanatorium to the home of relatives or friends who are on relief or barely able to support themselves, should be supplied with whatever is required in the way of assistance to enable him or her to secure the necessities of life. The amount required would depend upon the circumstances but would probably average between four and five dollars per week for each ex-patient.

Responsibility for providing after-care whenever required to ex-patients of sanatoria is placed upon the local municipality (city, town, village or township), but where the local municipality is part of a county for municipal purposes, such local municipality may recover from the county one-half of any money expended for the care outlined above.

It must be borne in mind that the after-care supplied will of necessity have to be of a higher standard than the care generally provided for unemployed persons in good health.

Patients who leave sanatorium against medical advice are reported by the

TABLE V—PROCEDURES IN THE ORGANIZATION FOR THE PROVISION OF AFTER-CARE OF EX-SANATORIUM PATIENTS IN ONTARIO

	Shortly after admission to sanatorium	When considered suitable for discharge from sanatorium	After discharge from sanatorium
Sanatorium	<ol style="list-style-type: none"> 1. Sends Form No. 1 to clerk of local municipality to secure acknowledgment of residence. 2. Sends medical report to family physician. 	<ol style="list-style-type: none"> 1. Sends Form No. 3 to Secretary of Local Board of Health (attn. M.O.H.) and to family physician requesting that arrangements be made for after-care. 	<ol style="list-style-type: none"> 6. Where pneumothorax refills are required and ex-patient lives in vicinity, such treatments can be secured at the sanatorium—may also be re-examined periodically by sanatorium clinic.
Local Board of Health		<ol style="list-style-type: none"> 2. Receives Form No. 3 from sanatorium and consults with family physician to make necessary arrangements for after-care. When arrangements are completed the Board notifies the sanatorium to discharge patient. 	<ol style="list-style-type: none"> 1. Provides the necessities of life where such are required until the ex-patient is declared by a physician or chest clinic to be suitable for work of a type and amount such that if obtained he or she will be self-supporting.
Family Physician	<ol style="list-style-type: none"> 3. Receives report from the sanatorium for his records. 	<ol style="list-style-type: none"> 3. Receives Form No. 3 from the sanatorium and co-operates with Local Board of Health in arranging for after-care. 	<ol style="list-style-type: none"> 2. Patient reports to family physician immediately upon discharge and is kept under observation.
Local Welfare Board		<ol style="list-style-type: none"> 4. May be requested by Local Board of Health to investigate financial status of family, etc. 	<ol style="list-style-type: none"> 3. May be requested by Local Board of Health to issue assistance to ex-patient, the cost of which will be charged to the Local Board of Health.
Chest clinics and physicians approved for pneumothorax refills			<ol style="list-style-type: none"> 4. Ex-patient reports to nearest chest clinic for re-examinations (at the times advised). 5. Reports submitted to family physician and M.O.H. 6. Pneumothorax refills given.
Provincial Department of Health	<ol style="list-style-type: none"> 4. Medical inspector visits sanatoria periodically to review records of all patients. 	<ol style="list-style-type: none"> 5. Arranges for the after-care of those patients who came from unorganized territory or who had established no municipal residence at the time of admission to sanatorium. 	<ol style="list-style-type: none"> 7. Provides the necessities of life where such are required to those from unorganized territory and those without municipal residence. 8. Receives complaints or comments by ex-patients and investigates the adequacy of after-care provided by any municipality. If municipality refuses to provide suitable after-care, patient may be returned to sanatorium and cared for there at the expense of the municipality.

Sanatorium

Address

Dear Sir:

I beg to advise that _____ was admitted to this Institution on _____, He claims to have been a bona-fide resident of your municipality. We have obtained from this patient the information set forth below.

1. Residence of patient during _____
six months prior to admission. Period of residence with dates.

MUNICIPALITY (if City, Street and No.)

From

To

2. Age..... 3. Sex..... 4. Married, Single, Widower, Separated, Divorced.

5. Dependents (a) Number..... (b) Ages.....

6. Name and Address of Husband or Wife.....

7. If patient is single and under 21 years of age, name and address of parent or responsible guardian.....
For convenience, please complete lower part of form, returning one copy to this institution and retaining the other copy for your records.

Medical Superintendent

In regard to _____ it is hereby acknowledged that he (she) has been a resident of the municipality of _____
for a period of three months within the six months next prior to admission to sanatorium.

or

The information as given above is inaccurate in that _____

Clerk

Use back of sheet for other remarks.

Form 1.

This form to be sent in duplicate to Clerk of Municipality.

Clerk

FORM 3—NOTIFICATION REGARDING AFTER-CARE OF PATIENT TO BE DISCHARGED FROM SANATORIUM

Regarding Aftercare of Patient to be Discharged from.....Sanatorium

Name of Patient..... Date.....
The above named, who upon admission to Sanatorium was acknowledged as a resident of.....
is now ready for discharge. In accordance with Section 50, Sub-section 2 of The Sanatoria for Consumptives Act, will the Secretary of the Local Board of Health or the Medical Officer of Health consult with the family physician and make any and all arrangements for the care required for this patient following discharge.

Will the Secretary of the Local Board of Health or the Medical Officer of Health communicate with me as soon as all arrangements have been completed. When pneumothorax refills are required, kindly also indicate the name of the approved physician or clinic selected to perform these treatments.

Sex..... Age..... Marital Status.....
Date of last admission to Sanatorium.....
Tentative address on discharge.....
Name and address of family physician.....
Name and address of next of kin (state relationship).....

Diagnosis (a) on admission:.....
(b) at present:.....
Types of treatment received in Sanatorium.....

Aftercare measures which will probably have to be supplied are underlined: None; Transportation from Sanatorium; Board and lodging in a suitable boarding home; Assistance to enable patient to be fed and lodged in home of relative; clothing issued as required; Pneumothorax refills; Transportation to and from pneumothorax centre; Care in Home for Aged; Care in Hospital for Incurables; Care in General Hospital.

Present condition: (1) Exercise.....
(2) Sputum.....
(3) Date sputum last positive.....
(4) Weight.....
(5) Temperature.....
(6) Able to care for room.....
(7) Able to walk to meals.....
(8) Able to walk outside for reasonable distances.....

FORM 3. (FORMERLY 3, 4 AND 5.)

If pneumothorax refills required:
(1) Date pneumothorax commenced.....
(2) Present degree of collapse.....
(%) of complete collapse.....
(3) Present frequency of refills.....
(4) Usual amount of air given.....
(5) Site of injection of air.....
(6) Pressure readings (actual pressure in mm. of water).....
(a) before refill.....
(b) after refill.....
(7) Approximate date for considering discontinuance of refills.....
(8) Complications or difficulties which might be encountered.....
(9) The approval of the Department of Health has been extended to the following physicians or clinics in your district for the giving of pneumothorax refills:.....

Recommendations: This patient should report to the family physician immediately upon return, and should have a complete chest re-examination, including chest x-ray and sputum examination in..... months. It is suggested that such re-examination could be performed by..... at.....
Further information: (note any medication required).....

..... M.D.
..... MEDICAL SUPERINTENDENT.

For patients with municipal residence, copies to Secretary of Local Board of Health (Att'n. M.O.H.) and to the family physician. For patients without municipal residence or from Unorganized Territory, copies in duplicate to office of the Division of Tuberculosis Prevention. When ascertained, copy also to physician who will give refills, with date when next refill is due.

(OVER)

superintendent of the sanatorium to the medical officer of health, the family physician and the Division of Tuberculosis Prevention. Those cases where the superintendent of the sanatorium is not able to send form No. 3 to the local Board of Health stating that the patient "is now ready for discharge" are not eligible for after-care, except pneumothorax refills where required until the patient can be re-admitted to sanatorium.

Those patients who are found after admission to be non-tuberculous are discharged promptly from sanatorium but of course are not eligible for after-care. In this paper, an ex-patient shall mean a person discharged from sanatorium where tuberculous disease was established and for which treatment was rendered.

The Sanatoria for Consumptives Act provides that if the Local Board of Health fails or neglects to arrange for and provide the above-mentioned care within thirty days of the notice (form No. 3) being sent from the sanatorium to the Local Board, the local municipality in which such Local Board has jurisdiction shall pay the sanatorium from that date for the maintenance of the patient at the prevailing rate.

If an indigent person who was a resident of municipality "A" at the time of admission to sanatorium, goes at any time after discharge from sanatorium to municipality "B", the latter municipality shall provide the necessary after-care but may recover the expense of such from municipality "A".

Assistance or care provided to ex-patients may, if desired, be administered by the local welfare office but must not be charged as "relief" (i.e., such persons should not be listed on the relief rolls for purposes of reimbursement by the Provincial Department of Welfare). The cost of such care should be taken from a fund set aside each year by the municipality for the "after-care of ex-sanatorium patients". In other words, the after-care assistance may be provided in the form of vouchers where desirable. The main requirements should be: (a) that the assistance be sufficient to provide the food and care which an ex-sanatorium patient requires; (b) that some supervision be given to ensure that the assistance will be used by or for the ex-patient; and (c) that the assistance not be considered as "relief" but should be borne entirely by the municipality.

Medical care or hospitalization charges for non-tuberculous conditions arising in ex-patients receiving after-care should not be considered as part of "after-care" and should therefore not be taken from the special fund provided by the municipality for post-sanatorium care. In the case of medical attention for non-tuberculous conditions in persons receiving after-care, the usual provision for medical care (medical welfare) would not be available since they are not to be listed as receiving relief, but such care should be provided as in the case of other indigent persons in the municipality not on relief.

"After-care" should be supplied for the ex-sanatorium patient until such time as he or she is declared by a physician or chest clinic to be capable of undertaking sufficient work and of a type which would make him or her self-supporting at a satisfactory standard of living.

In other words, before after-care is completely withdrawn in the case of an ex-sanatorium patient, it should be established that the ex-patient would be

self-supporting if he or she could secure the type and amount of work for which he or she is declared suitable. Whenever such condition is reached, and if the ex-patient is not able to secure suitable work, the usual arrangements for relief should be made.

There should be no reason why an ex-patient could not undertake part-time employment if and as prescribed by a physician or chest clinic, in which case the amount of money earned, if significant, could be deducted from the after-care allowance.

If it should be found that any municipality refuses to provide adequate care for any ex-patient of sanatorium who was a resident of that municipality at the time of admission, the Department of Health may cause that ex-patient to return to sanatorium, whereupon the charges for maintenance in sanatorium would become the responsibility of the municipality which was responsible to provide the after-care.

When pneumothorax refill treatments are required for any ex-sanatorium patient, the municipality in which the ex-patient was a "resident" at the time of admission to sanatorium pays any physician, hospital, or clinic, approved by the Department of Health for this work, any amount up to \$3 per refill which the ex-patient is unable to pay. The municipality then forwards to the Division of Tuberculosis Prevention duplicate copies of the account rendered by the approved physician, hospital, or clinic, with the necessary certificates completed. The Division of Tuberculosis Prevention then reimburses the municipality for the amount which it has expended in this manner. It is to be stressed that no ex-sanatorium patient should be compelled or influenced to abandon his or her pneumothorax treatments because of a dispute regarding the amount which the ex-patient could be expected to pay toward the treatments. There are now 76 approved physicians, hospitals or clinics scattered throughout Ontario where ex-sanatorium patients may receive pneumothorax refill treatments. Additional refill centres are being created.

DISCUSSION

As a result of approximately two years' experience with the particular after-care scheme adopted in Ontario, the following comments might be made.

(1) Some smaller municipalities at first fail to comprehend the details of the after-care plan. There is a tendency on the part of some municipalities to overlook their responsibilities under the Sanatoria for Consumptives Act, and to issue "relief" to indigent ex-patients. This procedure is definitely unsatisfactory, first in that the care allowed by the usual relief allowance is below that required by a person just discharged from sanatorium; and secondly, in that such ex-patients are not to be placed on the relief rolls for purposes of securing reimbursement from the Provincial and Dominion Government. Each municipality by reason of the savings effected annually by the Amendments to the Sanatoria for Consumptives Act in July, 1938, should appropriate in its annual budget of expenditures a definite sum to be used specifically for the after-care of ex-sanatorium patients.

Fortunately, in most cases an explanatory letter from the Division of

Tuberculosis Prevention directed to the medical officer of health or the Secretary of the Local Board of Health serves to clear up any misunderstanding.

(2) Certain municipalities, especially those where the issuing of after-care has been placed in the hands of their welfare office, appear to offer assistance grudgingly and occasionally act in an arbitrary manner toward their ex-sanatorium patients. In some of these municipalities the welfare office frequently inflicts hardship upon the ex-patient, which condition could be remedied by permitting the Board of Health to instruct and guide the welfare office in regard to the needs of the ex-patient. It would appear to be a mistake to allow the welfare office to operate in the matter of after-care without guidance from the local health authorities. Supervision of the after-care program locally set up should be the responsibility of the medical officer of health or some other officer designated by the local Board.

(3) As yet there is little evidence of any comprehensive attempt to rehabilitate the ex-sanatorium patient. After-care is provided and the ex-patient is not required to enter the labour market until he or she has been declared suitable for work. By that forward step we should be and are profoundly encouraged, but the next and already overdue step is to arrange, particularly in the larger centres, for a rehabilitation scheme such that while receiving after-care, ex-sanatorium patients could secure training for work of a type for which they would be suited and which would be less likely to cause their disease to break down. In a large percentage of cases, such a plan would allow ex-patients to return earlier to gainful employment or at least contribute in part to their maintenance. Reasoning along those lines, one would feel that the larger municipalities at least would become interested in rehabilitation if only from an economic standpoint. As it stands at present, such efforts at rehabilitation and vocational training now in operation are supported mainly by voluntary agencies with quite inadequate budgets. Much could be accomplished if the managements of certain selected types of industry could be interested in the employment of ex-patients at so-called "sheltered occupations". There is a great need for leadership and the formulation of a program in respect to this phase of post-sanatorium care.

(4) Although the after-care scheme has now been in operation in Ontario for somewhat less than two years, there are already very definite evidences of its value in the general plan of tuberculosis control. The provision for after-care including pneumothorax refill facilities throughout the province has resulted in non-infective patients who have received maximum benefit from sanatorium treatment being discharged. No longer need such patients remain in sanatorium until they are ready to return to work or until they no longer require pneumothorax refills. In that manner, sanatorium beds can be and are now being used for those who require intensive treatment.

More effective use is now being made of sanatorium facilities. During the hospital year ending September 30, 1939, 600 or approximately 10 per cent. more patients received treatment in sanatoria in Ontario than in the last full hospital year, under the previous legislation. As might be expected, the provision of after-care is resulting in fewer relapses of the tuberculous disease. During the hospital year ending September 30, 1939, there were only 386 re-

admissions to sanatoria as compared with 504 in the year ending September 30, 1937.

There can be no doubt that the tuberculosis legislation passed in Ontario in 1938 has made and will continue to make more efficient the control of this disease in this province.

SUMMARY

(1) The importance of post-sanatorium care for the tuberculous has been demonstrated.

(2) The present arrangements for the after-care of ex-patients of sanatoria in Ontario have been explained.

(3) Certain observations in respect to the operation of the after-care scheme in Ontario were discussed.

(4) The principles of post-sanatorium care include:

(a) Provision of adequate assistance to ex-patients upon discharge from sanatoria, where and as necessary, to provide suitable care until they are declared fit for work of a type and amount such that if obtained they would become self-supporting at a satisfactory standard of living.

(b) Provision of properly supervised vocational training to ex-patients with the purpose of selective rehabilitation into suitable employment when they are declared fit for such work.

(c) Provision of any necessary medical attention, medication or supplies required in respect to the tuberculous disease, as well as provision for pneumothorax refills to those ex-patients requiring such treatments.

(d) Provision for regular re-examination including chest x-rays and sputum examinations for ex-patients with copies of reports forwarded to the local Boards of Health. From time to time the Board of Health should request an opinion as to the suitability of the ex-patient for work.

(5) Certain ex-sanatorium patients will never be able to return to work at which they would be self-supporting after discharge, and therefore will require after-care to be supplied indefinitely by the municipality. The great majority of ex-patients, however, will require such care only for a limited period. In any case, after-care in the community for non-infective patients who have received maximum benefit from sanatorium treatment will be less expensive than continued hospitalization, and sanatorium beds can be used for those requiring intensive treatment for their tuberculosis.

BIBLIOGRAPHY

- (1) G. J. Wherrett: Follow-up information on 2,031 tuberculous patients one to thirteen years after discharge from sanatorium. *Am. Rev. Tuberc.*, 1935, **31**: 62.
- (2) Follow-up Studies on Patients discharged from Queen Alexandra Sanatorium, London, Ontario. Personal communication from medical staff of the sanatorium.
- (3) D. R. Hastings and E. R. Doerr: Follow-up Study of Tuberculous Patients. *Am. Rev. Tuberc.*, 1939, **40**:131.
- (4) After-care and Rehabilitation. Special supplement to *Brit. J. Tuberc.*, Oct., 1937.
- (5) Industrial Rehabilitation. Bulletin 22, Wisconsin State Board of Vocational and Adult Education, 1937.
- (6) Symposium on After-care. *Brit. J. Tuberc.*, 1938, **32** (Oct.).

Housing and the National Housing Act

G. H. FERGUSON, B.A.Sc.

*Chief, Public Health Engineering Division
Department of Pensions and National Health, Ottawa*

WHEN a Canadian city dweller speaks about housing to-day, he is likely to think not only of the roof over his head but also of heat in winter, exclusion of heat in summer, and light and ventilation throughout the entire year.

A clear understanding of the possible relationship between housing and disease may be facilitated by the following statement from a recent paper relating to the influence of overcrowding on the incidence of pneumonia:

"The factors responsible for the production of disease, especially infectious disease, must be considered from three important standpoints:

- (a) Predisposing causes which include among others, age, sex, habits, season, heredity, hygiene, climate, other diseases, poverty and housing.
- (b) Exciting causes—heat, cold, trauma, worry.
- (c) Specific causes—micro-organisms, viruses, toxins, etc."

It is considered probable by certain authorities that the above factors, acting together, set the stage necessary for the contraction of the disease.

There is much evidence that bad housing and bad environment are important predisposing factors in the spread of disease.

Housing connotes more than the mere condition, design, arrangement and construction of buildings. It means the conditions under which people carry on their daily lives, in their homes, and in their neighbourhoods. It means the general environment as well as the buildings. Modern housing projects are planned to provide the kind of environment that favours physical and mental health. In wise site planning the endeavour is made to ensure such essentials as low percentage of land occupancy by buildings, and the orientation of structures so that the maximum of sunshine will be afforded. In the well-planned structure provision is made for sufficient window areas and such arrangement of windows as will give maximum ventilation; for insulation against heat and cold; arrangement of rooms for maximum privacy; modern toilet and bathing facilities for every dwelling unit; hot as well as cold running water; efficient heating; laundry facilities; fire-resistant construction and safe egress.

In order to assure a practical minimum of these amenities in the houses financed under the National Housing Act each house is required to meet certain requirements established by the "Minimum Standards of Construction", and "Memorandum Specifications". In framing these requirements, the Dominion Housing Administration has available the research facilities and findings of the National Research Council of Canada. Under the auspices of this Council and

with the active co-operation of the Housing Administration and other qualified organizations and individuals a National Building Code for Canada has been in the course of development since December, 1937, and is now well advanced.

Significant studies on housing in relation to health have been made by the "Sub-committee on Health and Sanitation" and important facts have been assembled regarding such matters as ceiling heights, room sizes, illumination, plumbing, insulation, ventilation, thermal conditions, occupancy limits, environmental influences, recreation areas, zoning, etc.

Dominion assistance in financing, designed to improve housing conditions, is extended under two Acts. These are the Home Improvement Loans Guarantee Act 1937, and the National Housing Act 1938. Since the results of operations under both these Acts are released monthly, it is sufficient at this time to note only briefly what has been accomplished to date.

The Home Improvement Plan provides for loans to improve, repair, and extend existing dwellings, but not to finance new homes. To the end of May 1940, loans numbering more than 107,000 and aggregating \$42,900,000 had been made under this Plan. In 1939 alone more than 36,000 separate advances were made for an amount exceeding \$14,500,000, which was a substantial increase over either of the two previous years. It is of interest to note that a volume of loans somewhat higher than in 1939 has been maintained during the first five months of 1940.

Not only has the volume of loans under the Dominion Housing Act, and more recently, the National Housing Act, shown a decided increase each year, but the proportion of this total going to finance low-cost homes has steadily increased. Last year loans totalling \$20,500,000 were approved, an increase of about 40 per cent. over 1938. Altogether more than 6,300 new units were financed during 1939 with an average loan per unit of \$3,190. Total figures to the end of May 1940 stood as follows:

Number of housing units financed	16,500
Amount of loans	\$56,700,000
Amount per unit	\$ 3,436
Estimated value of new construction financed	\$70,000,000

It is worth noting that if we add to this \$70,000,000 of new construction under the Housing Act, the \$42,900,000 loaned under the Home Improvement Plan, we arrive at a total figure exceeding \$110,000,000 in Government assisted housing. These are aggregate figures and include loans for all types of housing in many price ranges. There is, however, one special type of loan which warrants some additional attention, as it marks a new and important development in Canadian housing.

Early in November, 1939, approval of the 1000th 90 per cent. loan was announced. These loans are available to prospective home owners who wish to build, for their own occupancy, homes valued at not more than \$2,500 including the lot, and are designed especially to meet the home financing requirements of



•NATIONAL HOUSING
•ACT
•DESIGN NO - 502•

•THIS 1½ STOREY HOUSE IN THE LOW COST FIELD IS SQUARE IN PLAN, WELL PROPORTIONED, PLAIN AND ECONOMICAL IN DESIGN •

•COST HAS BEEN KEPT TO A MINIMUM WHILE CONSERVING ALL THE FEATURES OF GOOD PLANNING AND ESSENTIAL ACCOMMODATION NECESSARY FOR A FAMILY OF MODERATE SIZE WITHOUT WASTE SPACE •

•THE GROUND FLOOR IS ARRANGED AS A SELF CONTAINED LIVING ESTABLISHMENT SO THAT THE UPPER FLOOR MAY BE LEFT UNFINISHED FOR FUTURE COMPLETION ACCORDING TO THE NEEDS OF THE OWNER, WHO MAY DO THIS WORK HIMSELF •

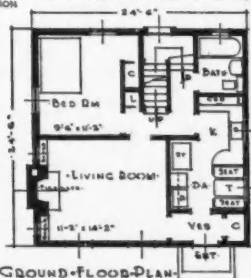
•CONSTRUCTION IS NOT COMPLICATED AND STOCK MATERIALS CAN BE USED WITHOUT CUTTING OR WASTE •

•WHEN CHOOSING PLANS STATE WHAT TYPE OF EXTERIOR FINISH IS TO BE USED, NAMELY, FRAME, STUCCO OR BRICK •

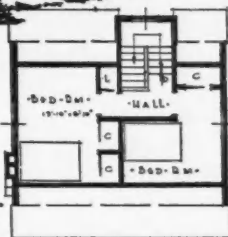
SECOND FLOOR • PLAN •

•SCALE IN FEET •

•CUBAGE (FOR DOCK) = 14185 CU FT •



•GROUND FLOOR PLAN •



•ALTERNATIVE KITCHEN • PLAN •



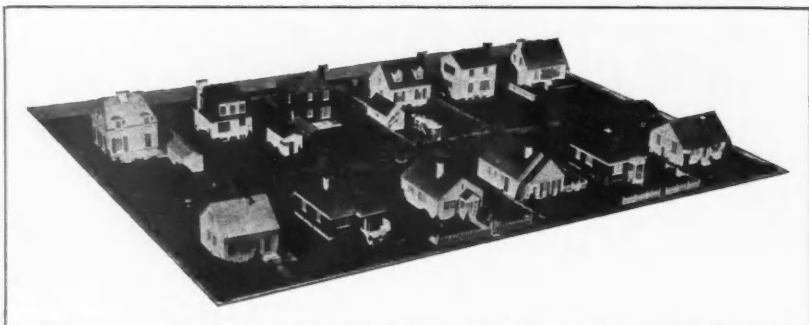
•WORKING DRAWINGS OF THIS HOUSE HAVE BEEN PREPARED BY THE HOUSING ADMINISTRATION & A COMPLETE SET CONSISTING OF 4 SETS OF BLUE PRINTS & 4 NATIONAL HOUSING MEMORANDUM SPECIFICATIONS (TO BE FILLED IN BY OWNER AND BUILDER) MAY BE PURCHASED FOR THE SUM OF \$10.00 •

•ORDER BY NUMBER FROM HOUSING ADMINISTRATION • DEPARTMENT OF FINANCE • OTTAWA • ONTARIO •

SKETCH AND FLOOR PLANS OF A TYPICAL DWELLING, AS ISSUED BY THE HOUSING ADMINISTRATION

families in the very modest income groups. That this is the type of borrower who has actually benefitted is borne out by the fact that approximately 40 per cent. of all 90 per cent. loans approved have been made to families showing incomes not exceeding \$100 a month, or \$1,200 per year, and 80 per cent. have been made to borrowers earning not more than \$125 per month or \$1,500 per year.

With the exception of a few 90 per cent. approvals in the latter part of 1938, this type of loan was a new development in 1939. These small loans now total 1,600, and the number is increasing rapidly. During the first five months of 1940 the number approved was 455 against 206 in the corresponding period in



Models illustrating the type of dwelling which is being built under the National Housing Act. These houses were chosen from architectural competitions and from those designed by the architects of the National Housing Bureau.

1939. It is quite probable that this type of minimum cost house will eventually occupy a very important place in our total residential construction.

Based on the lowest housing mortality rate, namely 2 per cent., and an approximate 2,200,000 habitable housing units in Canada, about 44,000 new units per year are necessary to take care of destruction and obsolescence. This does not include new dwellings required because of increase in population.

However, regardless of what estimate of actual requirements one may be prepared to accept, a fact which must be kept firmly in mind is that any soundly based housing program must be closely tied up with the capacity of the prospective owners to pay. Probably one of the most important results of the National Housing Act has been to direct attention to the possibilities of building in Canada this type of small home soundly constructed and financed on a plan suited to the normal income pattern of the average man of small or moderate means.

Recent regulations under the National Housing Act carry this policy one step further. Loans are now available only to finance single family houses and the maximum loan is \$4,000. Where an 80 per cent. loan is required the maximum lending value is, accordingly, \$5,000. In the case of a 70 per cent.

loan the maximum lending value is \$5,715. This means in effect that the complete facilities of Part I are now directed to the assistance of families of low and modest incomes who desire to own homes of their own.

We enter 1940 with a definite shortage of housing. The percentage of vacancies throughout the Dominion at the present time ranges between 1 and 2 per cent., whereas the normal percentage of vacancies is approximately 5 per cent. Owing to this condition and the liberal financing now available, home building has not fallen off as it did at the beginning of the Great War in 1914. During the first five months of 1940 the number of dwelling units financed under the National Housing Act shows an increase of 45 per cent. over the corresponding period in 1939. The volume of loans is up 29 per cent., the difference in the two percentages being accounted for by the lower cost character of the houses financed in 1940.

Undoubtedly the most important factor affecting the market for houses in the immediate future will be cost. If building costs rise rapidly house building might normally be expected to drop off. This may be offset by the absolute necessity for housing regardless of price, requiring that a larger proportion of the family budget be allocated for shelter.

Clinical Cases of Diphtheria Occurring in Patients who had Previously Received One Injection of Alum Precipitated Diphtheria Toxoid

J. N. MURPHY JR., B.S., M.A.; E. B. COOK, M.A.;

AND S. W. BOHLS, B.A., M.D.

*Bureau of Laboratories of the Texas State Department of Health
Austin, Texas*

ONE injection of 1 cc. of alum precipitated toxoid has, for some time, been an accepted method for immunization against diphtheria in the United States. The use of such a procedure has found its experimental basis in numerous researches such as those of Saunders (1932); Graham et al. (1933); Havens and Wells (1933); White and Schlageter (1934); Baker and Gill (1934); Keller and Leathers (1934); Monroe and Volk (1934), and McGinnis et al. (1934). These workers have reported favourable results with one dose of alum precipitated toxoid, using the negative Schick test as the criterion of immunity.

Glenny (1930), who first described the use of alum precipitated toxoid as an immunizing agent, has never pressed the use of one dose of this antigen. Fraser and Halpern (1935) and Schuhardt and Cook (1936), using antitoxin titrations of the patient's serum, tested the immunizing value of one dose of alum precipitated toxoid as compared to multiple doses of unmodified toxoid. Fraser demonstrated that 3 doses of plain toxoid were superior to one of alum precipitated toxoid, and Schuhardt showed that 2 doses of plain toxoid were better than one of the alum precipitated.

The use of the Schick test and antitoxin titrations afford the only means, other than epidemiological studies, by which investigators can check the effectiveness of various agents used in diphtheria immunization. Saunders (1933), Underwood (1935) and others have shown that a negative Schick test does not always indicate immunity. It is, also, well recognized that immunity in its entirety cannot be measured by circulating antibodies. The occurrence, however, of actual cases of diphtheria among supposedly immunized persons is definite proof that in those cases the antigen employed did not confer complete protection. Cases of diphtheria in children who had received 3 injections of plain toxoid have been reported by Garcia (1929), McKinnon, Ross and Defries (1931), McKinnon and Ross (1935), and Stuart (1938).

During the past two years we have been collecting case histories on all diphtheria cultures sent to this laboratory. In all, 103 positive cultures have

been isolated. Thirteen of the clinical cases of diphtheria gave a history of previous immunization with 1 dose of alum precipitated toxoid. None of the cases gave a definite history of previous immunization with plain toxoid. These facts we feel are significant.

During this work, we have had no immediate contact with the patients. The cultural studies were made at the Texas State Department of Health Laboratories in Austin, while the cases occurred in various cities throughout the state. Local health officers took the throat cultures, and confirmed their diagnosis by a microscopical examination. The original culture or, in some instances, fresh transplants of the mixed original culture, were mailed to the central laboratory.

Upon receipt of the cultures, microscopical examinations were made, and all positive cultures streaked on McLeod's (1933) medium, and on 10 per cent blood agar.

Pure cultures of *C. diphtheriae* were isolated and identified by their stained morphology and by their reactions in dextrose, saccharose, maltose, starch, glycogen and dextrin indicator media. Inoculation of the sugar media was made by adding 0.1 cc. of a 72 hour broth culture to each tube. A control tube of the basic medium containing no added carbohydrate was included for each strain. The strains were classified as "gravis", "mitis" or "intermediate" by their growth in broth, colony morphology, and fermentation reactions, in accordance with the criterion described by McLeod and others. Virulence tests were performed on rabbits according to the method described by Fraser (1937).

In the table, there is no isolation of the organism recorded for nos. 12 and 13. A microscopical examination by the local laboratory revealed the presence of "diphtheria-like organisms". This diagnosis was confirmed by a microscopical examination upon receipt of the culture. *C. diphtheriae* was not isolated, due probably to the age of the culture, overgrowth by other organisms present, or to some other factors not under our control. Patient no. 14 did not have clinical diphtheria. The local physician describing his condition stated: "Patient had abscess over right parotid with marked adenitis of the neck; no antitoxin was given and two days later throat and gums were negative."

DISCUSSION

The occurrence of clinical cases of diphtheria in patients who had previously received one dose of alum precipitated toxoid shows that in some individuals this procedure does not produce complete protection against diphtheria. All cases here tabulated were mild; but in each case antitoxin was administered. This could have been responsible for the rapid termination of the infection. In all cases, the causative organism was able to establish itself and produce clinical manifestations of diphtheria.

The longest time interval between the injection of antigen and the first development of symptoms was 5 years; the shortest, 3 months.

Nine "intermediate", two "gravis" and no "mitis" strains of *C. diphtheriae*

TABLE I

Number	Age	Alum Precipitated Toxoid	Date First Symptoms	Antitoxin Units given Date	Severity of Infection	Duration of Illness	Type of <i>C. diphtheriae</i> Isolated	Virulence Test
1. G. C. J.	4 yrs.	1935	9/19/37	9/19/37 18,000	Mild	4 days	Intermediate	Positive
2. M. R.	6 yrs.	Feb., 1937	10/2/37	10/2/37 20,000	Mild	7 days	Intermediate	Positive
3. O. W.	15 yrs.	Spring, 1937	2/10/38	2/12/38 20,000	No data		Intermediate	Positive
4. M. R.	6 yrs.	Unknown	10/19/37	10/22/37 20,000	Moderate	20 days	Gravis	Positive
5. A. D. H.	5 yrs.	1935	10/17/37	10/22/37 10,000	Mild	7 days	Intermediate	Positive
6. P. K.	5 yrs.	1935	10/20/37	10/22/37 10,000	Mild	20 days	Gravis	Positive
7. B. P.	3 yrs.	Unknown	10/20/37	10/28/37 10,000	Mild	21 days	Intermediate	Positive
8. W. J.	6 yrs.	Nov., 1937	2/2/38	2/4/38 20,000	No data		Intermediate	Positive
9. L. J.	11 yrs.	Sept., 1936	11/5/37	11/7/37 10,000	Mild	7 days	Intermediate	Positive
10. P. J.	6 yrs.	1937	2/28/38	3/5/38 20,000	No data		Intermediate	Positive
11. C. M.	7 yrs.	1933	9/4/38	9/6/38 10,000	No data		Intermediate	Positive
12. L. B.	9 yrs.	4/9/35	11/2/37	11/5/37 20,000	No data		No culture	
13. T. Z.	13 yrs.	1932	11/8/37	11/8/37 10,000	Mild	8 days	No culture	
14. C.C.O.*	14 yrs.	1933	11/23/37				Intermediate	Positive

*Patient did not have clinical diphtheria. He had an abscess over right parotid with marked adenitis. No antitoxin was given. Two days later throat was negative.

were isolated. This conforms with the usual prevalence of the three types in Texas.

The work of Fraser and Schuhardt suggests the use of an antigen given in at least two injections. In personal communication with one of the authors, Glenny reported that he has never pressed the claim for a single dose of alum precipitated toxoid. If it is to be used, however, he recommends two injections, a first injection of 0.1 cc. followed 3 to 4 weeks later with a second dose of 0.5 cc. Using this dosage he has obtained virtually 100 per cent. Schick negative results. We intend to compare the antitoxin response to two injections of alum toxoid with the response to one injection of alum and three injections of plain toxoid.

SUMMARY

1. Thirteen cases of clinical diphtheria were reported in individuals who had previously received one dose of alum precipitated toxoid.
2. None of the 103 cases studied gave a history of immunization with plain toxoid.
3. Eleven virulent strains of *C. diphtheriae*, nine "intermediate" and two "gravis" were isolated.
4. No apparent difference in severity of infection between the two types occurred.

ACKNOWLEDGMENT

The authors wish to thank V. T. Schuhardt, Associate Professor of Bacteriology, University of Texas, for his advice and help during this work.

BIBLIOGRAPHY

- Saunders, J. D. (1932) *Lancet*, 2, 1047.
Graham, A. M., Murphree, L. R., and Gill, D. G. (1933) *J.A.M.A.*, 100: 1096.
Havens, L. C., and Wells, D. M. (1933) *J. Inf. Dis.*, 53: 193.
White, J. L., and Schlageter, E. A. (1934) *J.A.M.A.*, 102: 916.
Baker, J. N., and Gill, D. G. (1934) *Am. J. Pub. Health*, 24: 22.
Keller, A. E., and Leathers, W. S. (1934) *J.A.M.A.*, 103: 478.
Monroe, J. D., and Volk, V. K. (1934) *Am. J. Pub. Health*, 24: 342.
McGinnis, G. F., Stebbins, E. L., and Hart, C. P. (1934) *Am. J. Pub. Health*, 24: 1141.
Glenny, A. T. (1930) *Brit. Med. J.*, 2, 244.
Fraser, D. T., and Halpern, K. C. (1935) *Canad. Pub. Health J.*, 26: 469.
Schuhardt, V. T., and Cook, E. B. M. (1936) *Canad. Pub. Health J.*, 27: 278.
Saunders, J. C. (1933) *Irish J. Med.*, 95: 611.
Underwood, E. A. (1935) *Lancet*, 7, 364.
Garcia, L. A. (1929) *Archives Lat. Am. de Ped.*, 23: 23.
McKinnon, N. E., Ross, M. A., and Defries, R. D. (1931) *Canad. Pub. Health J.*, 22: 217.
McKinnon, N. E., and Ross, M. A. (1935) *J.A.M.A.*, 105: 1325.
Stuart, R. D. (1938) *J. Path. & Bact.*, 44: 173.
Anderson, J. S., Cooper, K. C., Happold, F. C., and McLeod, J. W. (1933) *J. Path. & Bact.*, 34: 667.
Fraser, D. T., and MacNabb, A. L. (1937) *Am. Pub. Health A. Year Book*, 121.
Glenny, A. T. Personal Communication.

Psychiatric Social Work with Recessive Adolescents*

ISABEL J. DALZELL

Division of Mental Hygiene

Department of Public Health, City of Toronto

MENTAL health has been described as a condition of the personality which results in a type of functioning that brings constructive happiness to the individual—that is, the individual lives his life in such a way that his behaviour promotes his own happiness and well-being as well as the happiness and well-being of society. A mental hygiene program thus includes everything that can be done to produce minds that guarantee this high quality of living. Its objective is to produce personalities which, when mature, are capable of self-direction and self-repair under all reasonable conditions.

During the past few years a special attempt has been made in the Mental Hygiene Division of the Department of Public Health, Toronto, to assist the recessive adolescent. These children, whose ages range from 12 to 16 years, are drawn to our attention by parents, teachers, public health nurses, and social agencies. They are very sensitive and often suspicious of the motives of those trying to help them. Sympathy, tact, patience, and a sense of humour are qualities to be cultivated in dealing with them.

It is unfortunate that even today there are many parents, teachers, and others who fail to realize that the seclusive type of child is in need of help. In the busy program of the average classroom, the shy, timid, sensitive pupil is apt to be overlooked. If their application is satisfactory, the girl or boy is described as a good pupil, yet that pupil may be lonely, unhappy, and full of fears. We are endeavouring to establish a friendly contact with some of these girls and boys, their parents and teachers, in an effort to discover the factors underlying the tendencies towards introversion and to modify them where possible.

These adolescents are invariably day-dreamers. When questioned about occupation of leisure time, the usual reply is that they read and listen to the radio. The adolescent with retarded mentality may even be deprived of the pleasure of reading and depend entirely on radio programs suited to his mentality. For these maladjusted people we must endeavour to provide new interests and with sympathetic understanding assist them to make other contacts.

It is not possible to make a general statement regarding these cases. Each presents a different problem. A large percentage of seclusive adolescents appear to be victims of an abnormal environment, such as discord between parents, and immorality or drunkenness in the home. In many cases the child suffers from

*Presented before the Mental Hygiene Section at the twenty-eighth annual meeting of the Canadian Public Health Association, Toronto, June 1939.

a marked feeling of inferiority. This may be due to a pronounced physical defect, a speech handicap, defective vision, facial or bodily disfigurement, marked overweight or underweight, etc. Shabby or ill-fitting clothes are a source of maladjustment in the adolescent child that is often overlooked. Inadequate or faulty sex education is sometimes responsible for a temporary or even permanent personality difficulty.

Since generalization is not possible, an outline of the problems of the recessive adolescent, and the work we are doing and the results achieved, can best be given by presenting a series of brief case histories.

The following two cases illustrate the type of adolescent who suddenly becomes recessive and after a period of psychiatric help is able to lead a normal life.

CASE NO. 1

B.P. Girl. Junior Fourth Grade. C.A. 13.2, M.A. 11.8, I.Q. 89.

Referred by teacher and public health nurse. Remains away from school on the slightest excuse. Will not apply herself, is timid, easily discouraged, seclusive, and sensitive.

Family history: Father steadily employed; inclined to worry. Mother an excellent housekeeper and good mother. Brother aged 12 years, good student, well-adjusted.

Personal history: An attractive girl, very much interested in her personal appearance. Tall and thin, recently listless and tired. Has little self-confidence and is afraid to do things. Has a superior way of talking which probably irritates her friends. She does not like school. Has an unsympathetic teacher who feels that "all this nonsense should be spanked out of her." She likes to listen to the radio, occasionally skates. Her companions were not satisfactory; she received from them some unpleasant information about sex and now avoids them. Personality: day-dreams, quiet, indolent, easily depressed, resents authority.

Subsequent history: A friendly relationship was established between worker and girl and the advisability of forming new friendships was pointed out. One year after our first contact, the family moved to a new district and the girl was transferred to another classroom. She is interested in a friend of her brother, who goes to the same church and comes to the home to take her skating. Her physical condition is much improved. She told her mother that she had had more fun that winter than ever before.

Four years later: The girl is employed as a supervisor in a wool factory and works from 7.30 a.m. until 5.30 p.m. She has several girl friends and has had a boy friend for over a year, is taking piano lessons and likes to dance. She has developed into a very attractive woman and apparently is quite happy.

CASE NO. 2

F.P. Girl. First Form, High School of Commerce. C.A. 15.1, M.A. 15.6, I.Q. 103.

Referred by school attendance department. Suddenly refused to return to school, said she was ill. For several weeks previous she had been over-sensitive and depressed. Physical findings were negative. A part-time permit was granted by the Board of Education but she refused to attend even one day a week. Threatened to commit suicide if forced to return to school.

Family history: Father placid type, irregularly employed. Mother quiet, mild, not alert. Five older married sisters, living away from home. Two older brothers working. Comfortable home in working-class district.

Personal history: Nothing abnormal about patient's physical condition. Had an excellent record in public school, passing each year with first-class honours. Attended high school for almost a year, then refused to return. Used to be keenly interested in sports and had a great many friends; now has to be coaxed to leave the house and has dropped her friends. Personality: quiet, well-mannered, unwilling to talk, and cries a

great deal. Wept at clinic. On one occasion when she thought the worker would force her to return to school, she went upstairs and refused to come down.

Subsequent history: The psychiatrist felt that the suicidal threat was not an idle one. Since the girl was over 15 years of age and had been absent from school for five months, further efforts to urge her to return to school were not made. She was encouraged to spend time out-of-doors and visit her married sisters. After she became 16 years old, she obtained employment as a salesgirl in a store and was reported to be attending Young People's Association meetings once a week and renewing her former social contacts.

The only clue to the cause of the girl's personality change was a feeling of inability to cope with the school curriculum and a sense of loneliness at school. She was not the type of girl who would seek help from her teachers. Her parents were unable to help her, and she was seized with panic. Treatment should have been begun prior to her actual absence from school.

These two cases had normal home lives and presented nothing abnormal physically or mentally before the onset of the complaint. The next two cases differ in that they are boys, they reacted with negativism rather than tears, and their homes present unusual features.

CASE NO. 3

H.W. Boy. Senior Third Grade. C.A. 10.7, M.A. 15.9, I.Q. 149.

Referred by teacher. Lack of application, very negativistic, petulant, has no friends.

Family history: Father unemployed; intelligent but impractical; reads books on child psychology but leaves management of home and children to his wife; very independent, refused to accept relief until wife almost starved during her latest pregnancy. Mother in poor health, intelligent, very patient and quiet, no outside interests. Two brothers aged 1 and 9 years. Home sparsely furnished and unattractive. Lack of harmony owing to unemployment, undernourished condition of whole family, and patient's temper outbursts.

Personal history: Very independent, very sensitive. Likes to do all the talking. Is very forgiving and ready to ask forgiveness. Has no companions, as he resents teasing and is afraid other boys will get him into trouble. Likes to go on long walks alone. Has special ability along verbal lines.

Subsequent history: The boy was referred to the Big Brother Movement for further supervision, clubs, summer camp. He became quite aggressive, verging on the extreme, then swung back to a more average form of behaviour.

Five years later: The father is now conducting his own business and the family's economic situation is much improved. The boy attends high school and is fairly well adjusted. Undoubtedly he will always be very selective in his choice of friends.

CASE NO. 4

A.C. Boy. Seventh Grade. C.A. 14.3, M.A. 10.10, I.Q. 76.

Referred by parent and teacher. Temper outbursts in the home. Sits around the house making model aeroplanes. Is very sensitive about clothes supplied by the Welfare Department. Teacher describes him as quite introverted and unsocial.

Family history: Father unemployed for years; untruthful and dishonest. Mother works by day as a domestic. Marital situation very unhappy; mother interested in another man. Two sisters 9 and 15 years of age and a brother 10 years old. Oldest girl and patient quarrel; calls her brother "dumb".

Personal history: Unwanted child. Had the usual childish ailments. No companions, never goes out to play, does not attend church or Sunday school. Has attended several schools, as family is constantly moving owing to inability to pay rent. Referred boy to Big Brother Movement for further supervision. Was taken to a boys' club but failed to return.

Subsequent history: The worker enlisted the interest of the teacher, who made every effort to gain the boy's confidence. He decided to become a Boy Scout and joined in com-

pany with a boy in his own grade. An effort will be made to help him purchase the necessary uniform so that he will not be at a disadvantage in this respect. A Big Brother will endeavour to persuade the boy to go to camp.

In contrast to this boy, we have next a child with superior intellect, good family background, sound economic status, and no friends.

CASE NO. 5

S.S. Boy. Senior Fourth Grade. C.A. 12.2, M.A. 16.9, I.Q. 138.

Referred by teacher. Does not mingle naturally with other children. Has no idea of how to play and resents taking second place in the class.

Family history: Father well-to-do business man. Mother of average intelligence, good housekeeper, over-indulgent with the children. Older brother, university student, quite popular and interested in sports.

Personal history: Has defective vision and has not been encouraged to take part in sports in case he should break his glasses. Not allowed to play with other boys because they are too rough. Is interested in his health. Has always excelled at school. Parents give him a dollar each time he heads his class; same practice was carried out with his brother. Interested in stamp collecting and plays the piano. Very unpopular; sometimes plays with two younger boys of dull normal intelligence who live on the same street. Personality: smug, priggish attitude. Likes to help other children with their work.

Subsequent history: The parents were advised to encourage the boy to play with other boys, and to invite them to the home. Too much discussion of the boy's academic achievement in his presence was discouraged.

Five years later: The boy is attending a private school where stress is laid upon participation in sports. His school record continues to be exceptionally good but he has few friends and is indifferent towards sports. This family derive most of their pleasure within the immediate family circle and while that remains unbroken the need for outside interests does not appear to them to be of paramount importance.

The following is a case recently referred to the psychiatrist.

CASE NO. 6

D.C. Girl. C.A. 13, M.A. 14.4, I.Q. 111.

Referred by family physician. Extremely nervous when being observed while doing a task. Movements awkward. Timid and has very few friends.

Family history: Apparently average home. Father steadily employed, average education. Mother efficient person, interested in her family. One brother aged 10 years, average pupil; and a sister aged 6 years, a healthy, average child.

Personal history: Has had recurrent attacks of rheumatism. Is slow and awkward in her movements. In classroom rarely raises her hand to answer a question. In good health with exception of slight attacks of rheumatism. Quite attractive in appearance. Started school in kindergarten when 5 years old; repeated Junior First grade when 7. Has always been a slow worker and worried when other pupils finished their work before she did. Listens to the radio and skates with her mother. Does not like the girls in her grade; becomes emotionally upset at times because girls tease her. Belongs to the Canadian Girls in Training but does not always want to attend meetings; has a girl friend accompany her. Personality: slow, tidy, lacking self-confidence, happy in her home with her own family, ill-at-ease in another environment.

Subsequent history: The worker suggested cessation of teasing from all sources, attendance at camp during the summer, and no discussion of her shyness or slow movements in her presence. The girl's mother sees an improvement in her attitude, i.e., she is eager to go to camp. We cannot report further progress at present.

The effect of unusual behaviour patterns in the environment in the development not only of seclusiveness but also of neurotic tendencies is illustrated by the following cases.

CASE NO. 7

T.T. Girl. C.A. 15.10, M.A. 13.0, I.Q. 82.

Referred by church worker. Telling imaginary stories of love affairs and association with a narcotic ring. School reports girl swallowed some liquid in school hours and then fell asleep in classroom. Left notes of farewell to parents and teacher, stating she could not live Christian life and therefore ended it all. Not popular with other pupils. Has only one friend, three years older, who was recently married and moved away.

Family history: Father employed part-time; not prominent in family picture. Mother enjoys poor health, has a violent temper, is extremely interested in church activities. Accompanied by girl wherever she goes. Does not associate with neighbours; considers herself superior. No other children. Mother owns home, a well-furnished home located in a poor district. Family consider themselves superior to their neighbours.

Personal history: Unattractive girl with poor posture. Anxious for attention. Has had most of the communicable diseases and, according to mother, each disease was of a very severe nature. Started school at 6½ years of age. Repeated Junior First and Senior First grades. Has always been slow but mother thinks she is clever. Sings in the church choir and is interested in all church activities. No companions; mother considers the child too superior to associate with children in the neighbourhood, and the girl has an unpleasing manner. Personality: seclusive, untidy, unduly interested in health. A prim, forbidding attitude towards movies, dancing, etc.

Subsequent history: The girl was advised to develop other interests besides church and was encouraged to seek companionship of girls of her own age. The school did not favour readmission on account of her influence on other pupils. Of her own volition she later answered an advertisement and obtained a position caring for a preschool child and doing some housework. She developed a friendship with another nursemaid and goes to picture shows once a week. Her improbable tales of personal experiences have ended.

CASE NO. 8

E.G. Girl. First Form Commercial High School. C.A. 14.10, M.A. 15.0, I.Q. 101.

Referred by parent and teacher. A message was received at her school asking that she be allowed to go home as her mother had just died. A few weeks later another message was received asking for permission for her to go home as her father had died. On another occasion she received a letter of condolence on the death of her mother from a former Sunday school teacher living in England, after she had informed the lady by letter of her mother's death. At another time the girl reported that she had a sprained wrist, and carried her arm in a sling for several days. All these stories were untrue.

Family history: Father employed irregularly and worried about economic difficulties. Mother neurotic, not particularly interested in girl's effort to escape from unreality. Considers girl's unusual behaviour due to profuse menstruation. One sister aged 12 years, a superior pupil, normally adjusted, and a brother aged 9 years, an average child.

Personal history: Birth and development normal. At three years of age she fell out of a second-storey window. Only physical finding at the time was sprained ankle. Health good, with the exception of severe nose bleeds about the time of menstrual periods; menses very profuse. Started school at the age of 5 years and has always liked her teachers; lately gets "crushes" on them. Very much interested in forming clubs but must be the leader. Is fond of animals; the death of a dog which she possessed grieved her greatly. Not popular with other girls because she is too argumentative. Personality: a fairly attractive girl. Reported to be irritable, stubborn, resentful of authority. Day-dreams a great deal. Fond of being the centre of attraction.

Subsequent history: Supervision was carried on for approximately one year, at the end of which time the family moved to the country and the girl was transferred to a county school. During this period of contact the girl made several efforts to arouse the worker's surprise and interest by telling improbable tales of ill-treatment at home, and offers of various positions such as that of private secretary to a lady who travels. When the stories

were accepted casually and attention was directed to actual home and school experiences, the girl seemed to tire of fabricating the stories.

Two years later she had completed the second form commercial class. Recent enquiry revealed that she had found the curriculum difficult and completed her commercial course only with a struggle. After leaving school she telephoned one of her women teachers so frequently that she became a nuisance. She told the teacher that she had been involved in two or three accidents and in a last effort to create interest she reported that she was pregnant. According to the girl, she is employed in a private home but does housework only as a side-line, most of her time being occupied in typing; for this she receives \$80.00 a month. The authenticity of this information has not been investigated, but we fear that the girl still indulges in fantasy.

Case no. 9 is that of a boy whose condition progressed to a frank psychosis.

CASE NO. 9

I.H. Boy. Junior Fourth Grade, Hard of Hearing Class. C.A. 16.0, M.A. 15.2, I.Q. 95.

Referred by teacher. Pities himself, says children laugh at him. Says children in school hold their noses because there is an odour from sore on his leg (there is no odour). Stands around in the schoolyard, not taking part in any games.

Family history: Father considerate, anxious for boy's welfare; good workman; not aggressive. Mother died when boy was 3 years old, after period in Ontario Hospital, Toronto; said to have been a very shy person. Older brother died of pneumonia when 11 years old; patient was 7 years old at that time. Older sister died of diphtheria at 2 years. Stepmother energetic; blames boy's father for not being firm with him; expects he will become mentally ill like his mother. Two half brothers and a half sister, aged 2 to 6 years.

Personal history: Ill for the past 2 years, i.e., since he had rheumatic fever, but has been at school most of time. Had osteomyelitis when 14 and was in hospital for several months. Has since become totally deaf. Other physical defects include underweight, poor posture, and scars on leg due to osteomyelitis. Nothing abnormal in eating and sleeping habits. Repeated Junior First and Junior Fourth grades. Collects stamps but has no interest in companions or in reading. Personality: has become bad-tempered in the past two years. Dislikes school; does not want to go out after school.

Subsequent history: The boy was placed in the Ontario School for the Deaf. He developed delusions of persecution and many physical complaints, and was admitted to the Toronto Psychiatric Hospital. He is now in the Ontario Hospital, Whitby, having been certified as schizophrenic.

The next case illustrates, as have cases already presented, the effect of oversolicitous parental care and also of morbid attention to menstruation by the father as well as by the mother. It illustrates too the vicious circle of withdrawing from social contacts that takes place.

CASE NO. 10

M.M. Girl. Eighth Grade. C.A. 14.6, M.A. 13.5, I.Q. 92.

Referred by Attendance Department, Board of Education. Has refused to attend school for six months. Will not leave the house unless driven out. Will not go to Sunday school or even to the corner store.

Family history: Father opinionated, and unreasonable about school matters. Mother oversolicitous about the girl. No other children.

Personal history: Nothing noteworthy until first menstruation 6 months ago. Since then she has been "nervous". At her own insistence, has meals by herself when menstruating. No appreciable physical defect. Nothing abnormal in eating and sleeping habits. Repeating Eighth Grade at school, having been absent from examinations last year. Has not been worried about school work. Was ridiculed by teacher before class about six months ago.

Has had no companions for several months. Helps mother with house-work. Would like to resume Sunday school attendance. Personality: at first refuses to look at one, sitting with folded hands and lowered head. Later joins in conversation. Attractive appearance, serious, alert, answers quickly. Says she would like to return to school but cries when she is ready to leave the house.

Subsequent history: It was necessary to have the Attendance Department threaten court action before the father would require the girl to return to school. Her attendance was at first irregular but has become much better and she is happy at school.

DISCUSSION

We have found the assistance of the Big Brother Movement of invaluable help with the recessive adolescent boy. For their supervision in clubs and camps and their co-operation in working with us we cannot be too grateful. For girls the activities offered by the Big Sister Association, the C.G.I.T., and the Girl Guides are correspondingly valuable.

Sometimes a complete change of environment, such as can be found in a good foster home, is indicated. Fitting the adolescent into a foster home presents difficulties and we strive to assist the child while he is still a member of his family group. In cases where there are too many environmental factors prejudicial to satisfactory adjustment, we consider it advisable to withdraw, perhaps only temporarily.

Work with the older child is more effective when the child possesses normal or superior intelligence because good mental equipment makes it possible for him to gain insight and for the worker to help him to achieve a more mature adjustment through his own effort. The importance of the early years of growth cannot be too strongly emphasized and many of the adolescent difficulties which have been illustrated by the case histories might be avoided if parents and teachers were trained to recognize the warning signals when they first occur.

In citing these cases we do not intend to convey the impression that all quiet, reserved people are necessarily unhappy. Many of them are quite well adjusted and their presence among us often serves as a pleasant antidote to the garrulous extrovert. When reticence, timidity and shyness become a handicap, however, it is time to do something about it.

The Incidence of Enterobiasis in Children in a Convalescent Home in Toronto

E. KUITUNEN-EKBAUM, PH.D.

Department of Hygiene and Preventive Medicine, University of Toronto

IN 1938 a group of children in the I.O.D.E. Preventorium Convalescent Home were examined for pinworms, *Enterobius vermicularis*. These findings have already been reported (1). The incidence of enterobiasis was found to be high, namely, 73 per cent. of the children examined were positive for *E. vermicularis*. The actual incidence, however, was thought to be higher as only 3.7 swabs were taken per child, which probably did not disclose all the positive cases present.

In 1940 a second survey for enterobiasis was carried out* in the same institution in order to find some possible explanation why the incidence of enterobiasis in 1938 was found to be higher in the Preventorium than in the Hospital for Sick Children and the Thistletown Branch of the same hospital. The recent survey in the Preventorium, however, showed a lower incidence of enterobiasis than found in the same institution in 1938.

The hygienic conditions in the Preventorium are apparently perfect. The sleeping rooms and balconies are spacious and well ventilated. The boys have their sleeping section on the first floor, the girls on the second floor, and the children of both sexes, 2 to 5 years of age, are located together at the far end of the building. The children attend school in the Preventorium. There are no bed-patients. The Preventorium has an infirmary in a separate building, but the patients are usually sent to the Hospital for Sick Children.

During the time of the surveys there were about 15 to 20 children in each section. According to the information of Miss L. L. Morrison, the superintendent of the Preventorium, the children in the Preventorium come from a fairly low social-economic level. They came much from the same source during the time of both surveys of enterobiasis. The only change which has taken place is that formerly some of the children were kept in the Preventorium about ten to twelve months, whereas according to the present regulations, the longest period is four months.

Procedure

The cellophane tipped NIH swab (2) was used. The swabs were taken in the mornings between 7 and 8 o'clock. The children examined in 1938 were swabbed once a week from the middle of November to the middle of

*Under a grant from the Banting Research Foundation.

December. In 1940, the swabs were taken on consecutive days in the months of February and April. Most of these children were swabbed four times. Eight children in 1938 and 23 children in 1940 were dismissed from the Preventorium before four swabs could be taken. Seven children were swabbed 7 times. A total of 140 children were examined and 522 swabs were taken, 186 of which were positive. The number of swabs taken per child was 3.76 in 1938 and 3.70 in 1940.

Results of Examination

The results of the two surveys are shown in table I.

TABLE I
THE INCIDENCE OF ENTEROBIASIS IN 140 CHILDREN IN THE I.O.D.E.
PREVENTORIUM CONVALESCENT HOME

	No. exam.	No. pos.	%	No. of swabs taken	No. of swabs pos.	Boys' Section			Girls' Section			2-5 year group		
						No. exam.	No. pos.	% pos.	No. exam.	No. pos.	% pos.	No. exam.	No. pos.	% pos.
1938	67	49	73	252	110	20	16	80	22	19	86	25 (13 ♂) (12 ♀)	14 (6 ♂) (8 ♀)	56
1940	73	49	67	270	76	24	17	71	25	16	64	24 (11 ♂) (13 ♀)	16 (8 ♂) (8 ♀)	67
Total	140	98	70	522	186	44	33	75	47	35	74	49	30	61

The table shows that of 67 children examined, 49, or 73 per cent., were positive for enterobiasis in 1938 and of 73 children examined 49, or 67 per cent., were positive in 1940. Of the total number of 140 children examined, 98, or 70 per cent., were positive for enterobiasis. There is a noticeable decline in the incidence of enterobiasis in the girls' and boys' sections in 1940, whereas the incidence in the 2 to 5 year group is higher in 1940 than in 1938. The incidence among girls was 86 per cent. in 1938 and 64 per cent. in 1940. The boys showed a higher incidence than the girls in 1940 though the incidence among boys had dropped from 80 per cent. in 1938 to 71 per cent. in 1940. The total incidence was 75 per cent. for the boys and 74 per cent. for the girls. The ages of the children in the boys' and girls' sections were much the same in both surveys; the majority of these were between 6 and 10 years of age and those from 10 to 14 years of age were few in number. Of 25 children in the 2 to 5 year group examined in 1938, 13 were boys, 6 of whom were positive for enterobiasis, and 12 were girls, 8 of whom were positive. In 1940 of 24 examined, 11 were boys, with 8 positive, and 13 were girls, with 8 positive. The total incidence was 61 per cent.

The total number of 98 positive cases was disclosed as follows: 43 positive cases were disclosed with the first swab; 22 by the second swab, 13 by the third swab; 19 by the fourth swab and 1 by the seventh swab.

In 1938, of 67 children in the Preventorium, 27 were siblings of 13 families.

Twelve children, two in each of 6 families, were all positive for enterobiasis; 10 children, two in each of 5 families, showed one positive, another negative; two children of one family were both negative; and of 3 children of another family, 2 were positive and the eldest, 14 years of age, was negative. In 1940, of 73 children examined, only 12 siblings of 5 families were present. Of these 8 children of 3 families, 2 in one family and 3 in each of the other 2 families, all were positive; 2 children of one family were both negative and of the 2 children of another family, one was positive, another negative.

DISCUSSION

The results of the surveys have shown that the incidence of enterobiasis in the Preventorium was 73 per cent. in 1938 and 67 per cent. in 1940. In both cases, however, the incidence is higher than that obtained from the 1938 surveys (1) in the Hospital for Sick Children with 49 per cent. and in the Thistletown Hospital with 32 per cent.

Several factors may have been responsible for the higher incidence of enterobiasis in the Preventorium in 1938 than in 1940. The great number of siblings present was possibly one of the main factors. It is well known that enterobiasis usually spreads in families and frequently all members of a family are infected with the parasite.

The swabs were taken once a week in 1938 in November and December, while in 1940 the children were swabbed on consecutive days during the months of February and April. Bozicevich and Brady (3) have shown that swabs not taken on consecutive days will reveal more positive cases than the same number of swabs taken on consecutive days. Different authors have also suggested that *Enterobius vermicularis* is more frequent in some seasons than in others. These data, however, are conflicting, as some authors suggest the maximum incidence for pinworm infection occurs in the spring, and others suggest the autumn or the spring and autumn. Leuckart (4) suggests that the autumn may show an increased incidence, as the summer season is favourable for the propagation of the parasite.

The higher incidence of enterobiasis in the Preventorium than in the Hospital for Sick Children and the Thistletown Branch (1), was apparently due to the fact that the number of swabs taken per child in the Preventorium was 3.7, in the Hospital for Sick Children 2.4, and in the Thistletown Hospital 2.7. If more swabs per child had been taken, the incidence in the Hospital for Sick Children and the Thistletown Hospital would undoubtedly have been higher than recorded.

In the Thistletown Branch, with bed-patients hospitalized over long periods, the incidence may decrease, as many children may lose their parasites if strict hygienic measures are taken. On the other hand, in the Preventorium the children are in close contact during their stay in the institution and therefore more likely to be exposed to the infection. The social-economic standard of the patients examined in the three institutions was apparently much the same. There are no data yet for the children of the higher social-economic level in Toronto. The results of the surveys by various

workers, however, have shown that the children from families of high social-economic standard as well as those of the lowest level of society may be equally parasitized with pinworms.

SUMMARY

In the I.O.D.E. Preventorium Convalescent Home 140 children, 2 to 14 years of age, were examined for *Enterobius vermicularis*. The NIH swab, with 3.7 swabs taken per child, disclosed 98 children or 70 per cent. of those examined, positive for enterobiasis.

ACKNOWLEDGMENTS

This survey was made under a grant from the Banting Research Foundation with the kind co-operation of Dr. Alan Brown, Professor of Paediatrics, and Dr. G. L. Boyd, Department of Paediatrics, University of Toronto. The work was carried out in the Department of Hygiene and Preventive Medicine, under the direction of Dr. Donald T. Fraser, Professor of Hygiene and Preventive Medicine, University of Toronto. Miss L. L. Morrison, the Superintendent of the Preventorium, and her staff were most generous in assisting in these surveys.

REFERENCES

- (1) Kuitunen-Ekbaum, E.: A survey of intestinal parasites in children in Toronto (in press*).
- (2) Hall, M. C.: Studies on oxyuriasis. I. Types of anal swabs and scrapers, with a description of an improved type of swab. *Am. J. Trop. Med.*, 1937, 17: 44.
- (3) Bozicevich, J. and F. J. Brady: Studies of oxyuriasis. XV. A study of five hundred and four boys in a boy's camp. *Med. Ann. District of Columbia*, 1938, 7: 187.
- (4) Leuckart, R.: *Die menschlichen Parasiten*, etc. 512 pp., 1868.

**Am. J. Dis. Child.*

EDITORIAL SECTION

EDITORIAL BOARD

R. D. DEFRIES, M.D., D.P.H., *Chairman*
N. E. MCKINNON, M.B., AND J. T. PHAIR, M.B., D.P.H., *Associate Chairmen*
R. L. RANDALL, *Editorial Assistant*

GORDON BATES, M.D. A. E. BERRY, M.A.Sc., C.E., Ph.D. J. CRAIGIE, M.B., Ch.B., Ph.D., D.P.H.
J. G. CUNNINGHAM, B.A., M.B., D.P.H. C. E. DOLMAN, M.B., B.S., Ph.D., M.R.C.P., D.P.H. GRANT
FLEMING, M.C., M.D., D.P.H. D. T. FRASER, B.A., M.B., D.P.H. RONALD HARE, M.D. (LOND.). EDNA
L. MOORE, REG.N. E. W. McHENRY, M.A., Ph.D. G. D. PORTER, M.B. A. H. SELLERS, B.A., M.D.,
D.P.H. F. O. WISHART, B.A., M.D., D.P.H. J. WYLLIE, M.A., M.D., Ch.B., B.Sc., D.P.H.

DIPHTHERIA IMMUNIZATION

AMONG the resolutions passed at the fortieth meeting of the Dominion Council of Health, held in Ottawa on May 13th, 14th and 15th, was one which expressed the unanimous opinion of the Council concerning the method of immunization of susceptible persons against diphtheria. It was recorded that "it is the opinion of this body that three doses of diphtheria toxoid given at appropriate intervals provides at present the most satisfactory and most efficient method of protection."

This expression by the Dominion Council of Health is based on the exceptionally satisfactory results which have followed the administration of diphtheria toxoid in three doses in Canada during the past ten years. Distribution of diphtheria toxoid was undertaken by the Connaught Laboratories in 1925. The value of this product in preventing diphtheria was early established by the carefully controlled scientific observations of McKinnon and Ross in the School of Hygiene, University of Toronto, and confirmed by the successful control of diphtheria throughout Canada. The record of Hamilton, Brantford, St. Catharines, Toronto, Ottawa, Montreal, Vancouver, Winnipeg, and other cities in preventing diphtheria has attracted world-wide attention.

The possibility of improving diphtheria toxoid has been the subject of intensive laboratory and field investigations. The use of one dose of alum precipitated toxoid has been shown to be inadequate. Additional evidence of the inadequacy of this method of immunization is contained in a paper by Murphy and his co-workers published in this issue of the JOURNAL. The use of two doses of alum precipitated toxoid is receiving extended trial. As a result of continued laboratory investigation, other preparations of diphtheria toxoid are being developed, some of which may possess distinct advantages over the present form of this product and may greatly facilitate immunization against diphtheria.

The resolution passed by the Dominion Council of Health is most helpful at this time, as it assures all health officers that the present procedure of using three doses of fluid toxoid is highly satisfactory and efficient. There can be no question that we possess adequate means to prevent diphtheria. Every municipality must accept responsibility if deaths from this disease are allowed to occur.

THE ASSOCIATION'S WORK DURING 1939-40

(Part II)

REPORT OF THE COMMITTEE ON THE CERTIFICATION OF SANITARY INSPECTORS

THROUGH the generous co-operation of the Provincial Departments of Health, the Canadian Institute of Sanitary Inspectors, and sanitary inspectors throughout Canada, the Committee on the Certification of Sanitary Inspectors is able to report further progress. The Committee has had as its objective the establishment of minimum educational qualifications for the office of sanitary inspector, the facilitating of training, the conducting of adequate and reasonable examinations, and the improvement of the status of the sanitary inspector. The desire of the committee is that holders of the Canadian certificate will have training and experience which will qualify them to meet fully their responsibilities. It is gratifying that the certificate is being given increasing recognition throughout Canada as evidence of satisfactory training for this office.

Without the co-operation of the Provincial Departments of Health and of the medical officers of health in each of the provinces, the effort would be unsuccessful. From the commencement of the work in 1935, the committee has endeavoured to leave the responsibility for the conduct of the examinations in the hands of the Provincial Departments of Health, as far as is practicable. Each year the departments have appointed a chairman of the provincial board of examiners, who is responsible for the arrangements in general, the conduct of the oral examinations, and the assignment of the field investigation. The second member is chosen by the chairman, and the third member is nominated by the Canadian Institute of Sanitary Inspectors. Candidates, in preparing for the examinations, are required to obtain adequate field experience, and the Committee is indebted to the medical officers of health in many communities for providing facilities.

The sub-committee of the national committee, which is known as the Central Board of Registration and Examination and is responsible for the conduct of registration, the holding of examinations, and such other matters as the National Committee may refer to it, met in Toronto on June 17, 1939, with the following members in attendance: Dr. J. G. Cunningham (chairman), Dr. J. A. Baudouin, Dr. R. D. Defries, Dr. D. T. Fraser, Mr. A. S. O'Hara, Mr. Hugh McIntyre, and Dr. J. T. Phair (secretary). Consideration was given to the matter of the preliminary education of candidates and it was recommended that, beginning in 1941, the requirement should be the successful completion of four years of high-school work or its equivalent in secondary-school education.

The Board also reviewed the present facilities for training in preparation for the examination. A formal course of instruction is offered at the School of Applied Hygiene of the University of Montreal, under the direction of Dr.

J. A. Baudouin, and lecture courses are provided by the Department of Public Health of the City of Toronto and by the Department of Health of Montreal. Instruction is also given in the Departments of Health of Winnipeg, Calgary, Edmonton, and Vancouver. The *Manual for Sanitary Inspectors*, prepared and published by the committee, has been an important factor in the training of sanitary inspectors. Four hundred copies have been distributed and a fourth edition is now in preparation. On the recommendation of the Board, additional sections were prepared during the fall of 1939 and were included in the third edition, issued in January, 1940. The new material was made available to those who had purchased copies of the *Manual* since its first publication in 1936.

The Board also discussed the possibility of supplementing the *Manual* by providing some type of instruction by correspondence, but no action was possible in the intervening months. Consideration was given to arrangements whereby sanitary inspectors who have obtained the certificate may keep in touch with public health literature and with new developments in the field in which they are engaged. It is gratifying that arrangements have been made, in co-operation with the Canadian Institute of Sanitary Inspectors, whereby members of the Institute may become members of the Association and receive the CANADIAN PUBLIC HEALTH JOURNAL at a special rate.

To assist qualified sanitary inspectors in obtaining appointments, the Committee is prepared to forward to municipalities a list of the names of available sanitary inspectors with details of their qualifications. Announcements of this service have been published regularly in the JOURNAL.

The members of the Committee are gratified that regulations have been enacted in the Province of Ontario establishing qualifications for sanitary inspectors. The need for such action and the advantages of such qualifications have been presented to the various Provincial Departments of Health. As conditions permit, other provinces will probably follow the action of Manitoba, British Columbia, and Ontario in establishing qualifications for appointment. The Department of National Defence also has recognized the value of the certificate and a number of those who have obtained the certificate have been accepted for active service in field hygiene units and in other branches of the service.

The 1939 examinations were held on September 20, 21 and 22 in seven provincial centres: Vancouver, Edmonton, Winnipeg, Toronto, Montreal, Halifax, and Charlottetown. Fifty-four candidates completed the requirements and were permitted to take the examinations. Forty-three passed in all the subjects of the examination; three were conditioned in one subject and will have to repeat it at a subsequent examination before the certificate can be granted; and eight failed, having obtained less than the pass mark in two or more subjects.

The successful candidates, and those conditioned in one subject were as follows:

British Columbia: C. H. W. Burch, Vancouver; A. C. Hinton, Victoria (*Communicable Diseases*); G. E. McLaughlin, Kamloops; A. W. Mallett, Vancouver; A. R. Peers, North Vancouver; W. W. Shorrock, Goldstream P.O.; and John A. Stringer, Vancouver.

Alberta: W. A. Moisey, Edmonton.

Manitoba: L. L. Racklin, Winnipeg.

Ontario: R. Boyd, Todmorden; G. Buckley, Toronto; J. Cluney, Galt; W. A. Curtis, Hamilton; Wm. Gray, Toronto; J. M. Johnston, Toronto; J. Meehan, Timmins; W. Navion, Ottawa; P. J. Payette, Cornwall; S. Pye, Toronto; F. Rothery, Sudbury; D. Sadoway, Toronto; E. D. Taylor, Brantford; Wm. Wallace, Kingston; Wm. Westover, Toronto (*Communicable Diseases*); R. W. Witherspoon, Hamilton; and G. T. Young, London.

Quebec: J. F. R. Archambault, Montreal; L. W. Armstrong, Lachute; E. Bibeau, Montreal; F. Brunelle, Montreal; J. M. A. Carbonneau, Montreal; J. E. Daignault, Montreal; J. A. Désjardins, Montreal; L. G. Forté, Montreal; S. Fournier, Granby; J. P. A. Gonneville, Montreal; J. A. Hotté, Montreal; G. Lacombe, Grand'Mère; A. Lapointe, Montreal; P. Larochelle, Chicoutimi; E. Martel, Montreal; J. A. Paré, Montreal; and R. J. Robitaille, Montreal.

Nova Scotia: Allister Grant, Sydney.

Prince Edward Island: Dr. J. J. Farrell, Summerside.

The members of the Central Board are deeply conscious of their indebtedness to the members of the Provincial Boards of Examiners who co-operate so generously in the conduct of the examinations. To the following members of the Boards for last year's examinations the committee expresses its thanks:

British Columbia: Dr. Stewart Murray, chairman; Mr. R. M. Martin, C.E., and Mr. Reginald Startup, C.S.I. (C.). Dr. J. S. Kitching served as associate chairman.

Alberta: Dr. G. M. Little, chairman; Mr. D. B. Menzies, C.E., and Mr. J. Butterfield.

Manitoba: Dr. C. R. Donovan, chairman; Mr. John Foggie, and Mr. W. D. Hurst.

Ontario: Dr. J. G. Cunningham, chairman; Dr. L. A. Pequegnat, and Mr. Hugh McIntyre, A.R. San. I. In addition, the Committee is indebted to the following members for their assistance in the oral examinations: Dr. A. R. B. Richmond, Dr. R. D. Defries, and Dr. D. T. Fraser.

Quebec: Mr. Theo. J. Lafreniere, C.E., chairman; Dr. Ad. Groulx, and Mr. Aimé Cousineau, C.E. The Committee acknowledges its indebtedness also to Dr. L. A. Chabot, Dr. Grant Fleming, Dr. A. R. Foley, and Dr. J. G. Hood for their kindness in assisting in the conduct of the oral examinations.

Nova Scotia: Dr. J. J. MacRitchie, who acted as chairman in the absence of Dr. P. S. Campbell; Dr. D. J. MacKenzie, and Mr. H. J. Johnston.

Prince Edward Island: Dr. B. C. Keeping, chairman, and Dr. P. A. Creelman.

The examination papers in the three written subjects were as follows:

SANITATION

(Thursday afternoon, September 21st)

Time: 3 hours

1. You are requested to survey the domestic wells in a village.
 - (a) Describe your procedure in making such a survey.
 - (b) What laboratory examinations would be required? Indicate how the samples would be taken and forwarded to the laboratory.
 - (c) How would you explain to the householders the occurrence of the pollution which may be found to exist?
 - (d) By means of a sketch, present the essentials in the construction of a safe well.
2. (a) Discuss the importance of proper disposal of excreta in rural areas.
 - (b) Describe in detail the method which you would recommend for: (i) a farmhouse,

(ii) a summer cottage on a rocky island, (iii) a house having a piped water supply. Illustrate your answer by sketches.

3. (a) Define "refuse".

(b) What are the essentials in a satisfactory system of collection?

(c) What factors must be considered in the choice of a site for a garbage dump?

(d) How would you maintain such a dump in a sanitary condition?

4. Describe the plumbing arrangements of a 6-room dwelling house. Illustrate your answer by a sketch showing the various connections, including the sewer connection.

5. Write notes on:

(a) Nuisances according to the Public Health Act.

(b) Minimum requirements for a lodging house located in a municipality and accommodating 25 men.

(c) Activated sludge treatment of sewage.

FOOD CONTROL AND LEGISLATION

(Friday morning, September 22nd)

Time: 3 hours

1. A milk producer seeks advice regarding the production of clean milk. During the summer months the bacterial count of the milk, on arriving at the dairy plant in the city, ranged from 150,000 to 500,000 bacteria per cc. Tests for *B. coli* showed this organism to be present. The farm is situated forty miles from the receiving dairy. The barn is old and the floors are of wood; the windows are adequate. The farm is supplied with electrical power. A herd of twenty cows is maintained. The producer desires to build a new milk house, and to make other necessary changes.

(a) Outline fully the inspection which you would make.

(b) Describe the plan which you would suggest for the construction of a suitable milk house, indicating its location and operation.

(c) State in detail the instructions which you would give regarding washing, sterilization, and drying of the dairy-farm utensils.

(d) What field and laboratory tests would be employed in making observations on the milk from this dairy farm in order to determine the sanitary quality of the milk?

2. You are called to make a sanitary inspection of a summer hotel accommodating 150 guests. The dining room accommodates 100 persons. The occurrence of an outbreak of "food poisoning" has been reported.

(a) Outline in detail each step in the sanitary inspection which you would make.

(b) What specific recommendations would you make to the proprietor to assure the safe handling and storage of food, including the washing of dishes and utensils?

3. (a) Name the common diseases which may be transmitted to man through the consumption of raw or improperly cooked meat, giving in each instance the name of the infective agent.

(b) Outline the responsibilities of the Federal Government and of municipalities in meat inspection, including the sale of meat in stores.

4. Small slaughter houses are often found to be in an insanitary condition. Outline the minimum requirements for a small slaughter house situated in the country, indicating the layout, construction, sanitary arrangements, and operation.

5. (a) What are the essential features in an inspection of the mechanical equipment of a dairy distributing pasteurized milk?

(b) On what evidence would you forbid the sale, in a store, of fish and poultry which you consider unfit for human use?

(c) Why is the control of rats and mice important in food establishments? Describe the method which you would employ in exterminating rodents in a bakeshop.

PREVENTION AND CONTROL OF COMMUNICABLE DISEASES AND
RELATED SUBJECTS

(Friday afternoon, September 22nd)

Time: 3 hours

1. In a community of 5000 persons 10 cases of typhoid fever have occurred recently. The community has a municipal water supply.
 - (a) State the possible sources of infection.
 - (b) What instructions would the medical officer of health immediately give to the public?
 - (c) Outline the investigation that would be made by the Department of Health.
 - (d) What control measures would be necessary in each of the possible sources investigated?
2.
 - (a) What is the causative agent of tuberculosis?
 - (b) How is tuberculosis transmitted?
 - (c) What measures are being taken in your province to provide early diagnosis and treatment?
 - (d) How may improved sanitary conditions influence the incidence of tuberculosis?
 - (e) What is the tuberculin test and what use is made of it in controlling tuberculosis?
3. Name four communicable diseases and give for each the causative agent, the incubation period, regulations for quarantine and isolation, and specific measures (vaccination) for control if such are available.
4. Outline the steps which should be taken by a mother who is caring for a child suffering from scarlet fever, indicating (a) the essentials in the preparation of the room, (b) the precautions that the mother should take to prevent transmission of infection to herself and to others, and (c) the measures required at the conclusion of the illness before quarantine is removed.
5.
 - (a) Describe briefly the procedure in fumigating a dwelling house with hydrocyanic acid gas.
 - (b) Name two diseases in which the causative agent is transmitted by insects. Indicate how this transmission may occur in each disease.
 - (c) Define "crude birth rate" and "infant mortality rate".

With the granting of the certificate to forty-three candidates in 1939, one hundred and eighty-one inspectors have obtained the Canadian certificate since the examinations were introduced in 1935.

June, 1940.

J. G. CUNNINGHAM, *Chairman.*REPORT OF THE COMMITTEE ON THE RURAL HEALTH
CONSERVATION CONTEST

AN important factor in the Canadian Public Health Association's program of strengthening rural public health services is the Canadian Rural Health Conservation Contest, which is conducted in co-operation with the American Public Health Association with the financial assistance of the W. K. Kellogg Foundation of Battle Creek, Michigan. The contest is open to rural district or county health units offering a full-time service. Thirty units entered the 1939 contest, the third to be held in Canada, and of this number twenty-five completed all the requirements, including the preparation of the detailed analysis of the health program which is known as the "fact-finding schedule". Visits were made to the majority of the participating units by Dr. James Wallace, Associate Field Director of the American Public Health Association. These visits were made at the request of the units and entailed travel throughout Canada, three of the competing units being in British Columbia, three in Alberta, one in Manitoba, and the remainder in Quebec. Discussion of local

problems with Dr. Wallace, the active co-operation of a local committee in the preparation of the fact-finding schedule, and the evaluation of the health program by the Grading Committee, are important factors in making the contest an effective means of strengthening rural public health services.

The first award in the 1939 contest went to the St. James-St. Vital Health Unit, Manitoba. The medical officer of the unit is Dr. I. M. Cleghorn, D.P.H. This unit had received awards of merit in both the previous contests. Awards of merit were given to the following units:

Terrebonne County Health Unit, St. Jerome, Quebec; Dr. F. Leclerc, D.P.H., Medical Officer.

Foothills Full-time Health District, High River, Alberta; Dr. A. Somerville, D.P.H., Medical Officer.

Nicolet County Health Unit, Nicolet, Quebec; Dr. Jean Paquin, D.P.H., Medical Officer.

Laviolette County Health Unit, Grand'Mère, Quebec; Dr. E. Frenette, D.P.H., Medical Officer.

Awards were thus received for a third time by the Terrebonne and Nicolet units and for a second time by the Laviolette Unit. The Foothills Unit, which received its first award of merit this year, had also participated in both the previous contests. As no unit is permitted to win first place in the contest for more than two successive years, a special award was granted the former dual winner, the unit serving the counties of St. Jean, Iberville, Laprairie and Napierville in Quebec. The medical officer of this unit is Dr. A. Lapierre, D.P.H. The continued participation in the contest of health units which have not to date received an award is heartening to the Committee. This attitude evidences on the part of these participants a true appreciation of the purpose of the contest, which is, briefly, an attempted self-appraisal of program and accomplishments in keeping with a reasonable and accepted standard. The contest also serves to stimulate that desirable type of local pride which is an aid to the directing officer in securing financial and moral support for necessary extension of public services.

The competent manner in which a community is meeting its health problems is the basis upon which awards are made. A group of public health experts, constituting the Grading Committee, carefully appraises each participating unit, grading it on the measures that it takes: (1) to provide and safeguard its water supply; (2) to furnish adequate and safe sewerage disposal; (3) to reduce infant and maternal deaths; (4) to combat tuberculosis and syphilis; (5) to protect its citizens against other communicable diseases; (6) to insure healthy children; (7) to protect and safeguard its milk and other foods; (8) to promote effective co-operation with its physicians and dentists in furnishing services to all those who need them; and (9) to enlarge and improve lay understanding of the ways and means of preventing sickness and death and of maintaining good health.

To the American Public Health Association and to the W. K. Kellogg Foundation the Association again expresses its appreciation of their willing extension of the contest to Canadian health units.

GRANT FLEMING, *Chairman*.
April, 1940.

J. T. PHAIR, *Secretary*.

Twenty-Ninth Annual Meeting Fort Garry Hotel, Winnipeg September 19-21

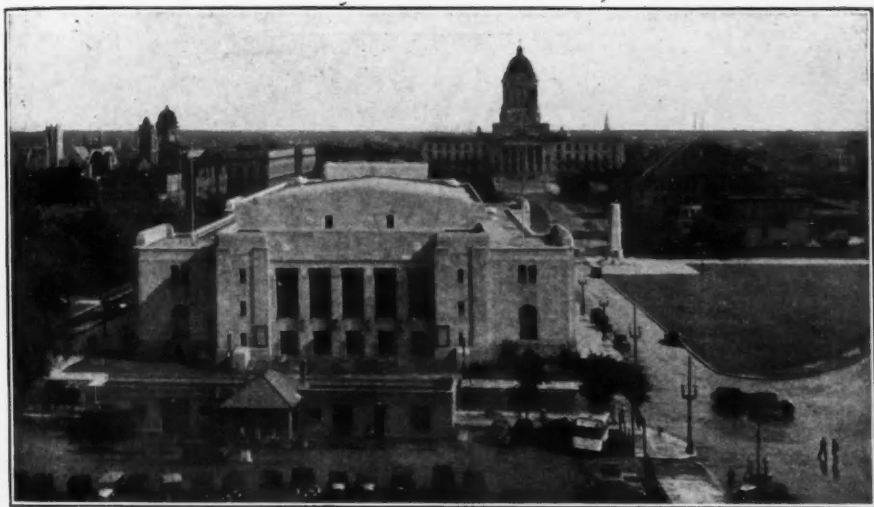
WINNIPEG, the "Gateway of the Golden West," welcomes the members of the Canadian Public Health Association on the occasion of the twenty-ninth annual meeting, which will be held in the Fort Garry Hotel on September 19th to 21st in conjunction with the meeting of the Manitoba Medical Association.

From a Hudson's Bay trading post (Fort Garry) in 1870, with a population of 215, Winnipeg has grown to be a city of 300,000. The name had its origin in the Cree Indian name given to the lake forty miles north, "win" (muddy) and "nipee" (water). It is situated in the Red River Valley at the confluence of the Red and Assiniboine rivers, and was built along the old Red River trail. The dog teams, the Red River cart brigades, the river boats, the railroads, and now the North West Air Lines, have kept to the same route. Because of its geographical position and extensive railway facilities, Winnipeg has been called the Hub of Canada. It has become the greatest grain centre on the North American continent and the centre of many financial, commercial, wholesale, mining, fishing, and manufacturing industries. The city is noted for its wide, well-paved thoroughfares and beautiful residential streets. There



LEGISLATIVE BUILDING, WINNIPEG

are forty-two beautiful public parks and squares, and eighteen golf courses, two of which are municipal. Winnipeg has more than sixty hotels, varying in size from palatial hostelrys to the smaller suburban inns, and the city's many restaurants are also of an exceptionally high standard. The airport facilities of the city are unrivalled anywhere in Canada. Within a few minutes by automobile from downtown Winnipeg lies Stevenson Field, the municipal airport. The Brandon Avenue base on the wide expanse of the Red River offers a sheltered landing for flying boats and sea-planes. Winnipeg's hydro-



CIVIC AUDITORIUM, WINNIPEG

electric power, the cheapest in North America, is developed in the Winnipeg River by several modern and extensive plants. Of these, the Winnipeg City Hydro-Electric System operates two, at Pointe du Bois and Slave Falls. The Winnipeg Electric Company's three plants are located at Pinawa, Great Falls, and Seven Sisters Falls.

The Legislative Building of the Province is situated in the heart of Winnipeg. This imposing structure, one of the most beautiful in the West, was constructed of the Province's own fossil-marked, mosaic-like, tapestried limestone. One of the most impressive features of the building is the grand staircase. From the floor of pinkish-grey Tennessee 'marble bordered by black Vermont marble and verd-antique, it rises with broad steps of Italian marble, outlined by a railing of fossil-marked stone. On either side stands the emblem of the Province, the buffalo, sculptured by Gardet of Paris.

The members will be especially interested in visiting the Department of Health and Public Welfare of the Province, of which the Honourable I. B. Griffith is Minister. The offices of the Department are located in the

Legislative Building. In the City Hall are the headquarters of Winnipeg's efficient Health Department, under the direction of Dr. M. S. Lougheed.

The University of Manitoba is located in Fort Garry. Colleges affiliated with the University include St. Boniface College, St. Boniface; St. John's College, United Colleges, Manitoba Medical College, Manitoba Law School, St. Paul's College, Winnipeg; and Brandon College, Brandon. Of special interest to the members of the Association is the pathological museum in the Manitoba Medical College. The work of collecting material was begun by



CENTRAL PARK, SHOWING KNOX UNITED CHURCH
IN THE BACKGROUND

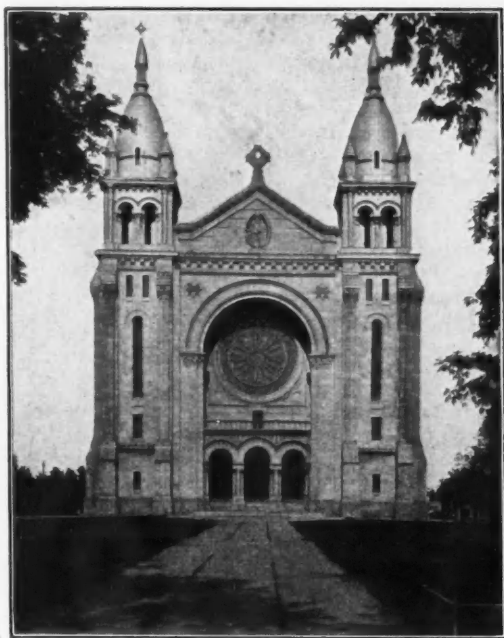
Dr. William Boyd, now Professor of Pathology in the University of Toronto, and the museum now presents one of the finest collections of pathological specimens on the continent.

Winnipeg has the largest and finest municipal auditorium in Canada. The museum located in the Civic Auditorium was started seven years ago by voluntary effort and covers natural science, crafts, and items of historical interest, especially in relation to the Province. The chief items are collections of local birds and a very fine series of local fossils, as well as a few fine habitat groups.

The Hudson's Bay Company's historical exhibit, located on the fourth floor of the Company's Winnipeg store, depicts the history of the Company in graphic form from the voyage of the "Non-such" in 1668 to the present-day activities of the organization. Many of the exhibits are of unique interest

and value. A large section is devoted to transportation, showing dozens of ship models.

Twenty miles north of Winnipeg, on the Trans-Canada Highway and the Red River, stands Lower Fort Garry, built in 1831-39 by "The Governor and Company of Gentlemen Adventurers of England trading into Hudson's Bay." The walls and buildings are of limestone. The fort is quadrangular and covers an area of four and one-half acres. Within the walls there still stand the original governor's residence, store, and fur warehouses, etc.



ST. BONIFACE CATHEDRAL

On the opposite side of the Red River from Greater Winnipeg is St. Boniface, the "Cathedral City." Its history dates back to the arrival of Bishop Provencher, who chose St. Boniface as patron saint for his chapel. St. Boniface Cathedral, which stands on the site of the chapel where the first mass was celebrated in November, 1818, is a hallowed landmark of the Canadian West. The present cathedral was built in 1918 and is the largest church in Western Canada.

VITAL STATISTICS

RECENT PUBLICATIONS BY THE DOMINION BUREAU OF STATISTICS

THE annual publications of the Institutional Statistics branch of the Dominion Bureau of Statistics have proved of national value in the field of health and public welfare. Two reports have been published so far this year—the Seventh Annual Report on Mental Institutions (1938), and the Annual Report on Hospitals in Canada for the year 1938.

The Annual Report on Mental Institutions brings together for all provinces comparable figures on administrative aspects, movement of patient population and finances of all mental institutions in Canada. Considerable special and detailed statistical information on first admissions, re-admissions, discharges and deaths in public mental hospitals during the year is included.

The present arrangements for the collection and compilation of data on mental institutions from each province is one in which the Bureau acts as an intermediary. A card system now in use in 38 public mental hospitals in Canada provides the facts and permits the application of uniform practice in the preparation of reports.

The Annual Report on Hospitals in Canada excludes sanatoria and mental institutions for which special annual

reports are published and includes comparative figures for the five years 1934 to 1938. The report is presented in three sections. The first provides information as to the number, types and distribution of hospitals, their bed capacities, personnel, medical and social services, schools of nursing, organized out-patient departments, etc. Statistics on movement of patient population during the year compared with the four preceding years are included, among which are the number of admissions, births, patients under care, discharges, deaths, collective days' stay and average duration of care. In addition, there are two further sections covering hospitals operated and controlled by the Dominion Government and the activities of the Victorian Order of Nurses and the Canadian Red Cross Society.

The signal success which has been achieved within the space of twenty years in the development of national statistics in every important field of human interest and welfare is most remarkable. The Dominion Bureau of Statistics and the several provincial and hospital authorities who co-operate each year in making these reports possible deserve commendation.

AN IMPORTANT EFFORT IN VITAL STATISTICS

THE new PHYSICIAN'S HANDBOOK ON BIRTH AND DEATH REGISTRATION, recently issued by the Bureau of the Census at Washington, D.C., may be regarded as marking an important effort in vital statistics. While it may be designated as the ninth edition of a document which first appeared in 1910 under the title PHYSICIAN'S POCKET REFERENCE TO THE INTERNATIONAL LIST OF CAUSES OF DEATH, it is so vastly different in content and so broad and practical in outlook that

it might better be described as a first edition.

The Handbook was prepared under the supervision of Dr. Halbert L. Dunn, Chief Statistician for Vital Statistics. It presents briefly the essential facts which the physician should know concerning birth and death regulation, and hence the term "vital statistics" as used in the text is confined to the registration and statistics of births and deaths.

While the principal objective may

have been to provide a ready reference for the practising physician, the Handbook will be of great value in the instruction of medical students and physicians in vital statistics. Its usefulness does not stop here, however, for it is evident that it can serve a broad field as a practical reference.

The Handbook is divided into eight sections, including three appendices. The first two sections are devoted to the duties of the physician in the registration of births, deaths and stillbirths, and to the preparation of birth and death certificates—the importance of accuracy, the common sources of error and the essentials to be observed in completing the records. In an attempt to present clearly the physician's duty in respect to the certification of cause of death, a clear indication is given of the basis of procedure, the definition of "cause of death" for statistical purposes and some of the problems which present themselves to both the physician and the statistical office. The inclusion of three illustrative case histories is valuable.

Reference is made in the section dealing with medical certification to the provision made on the new standard death certificates for the physician to designate his opinion as to the cause to which death should be attributed. The use which the Bureau intends to make of such information is indicated. The present plan is to undertake a dual classification—by rule, and according to the physician's viewpoint—in order to determine the relationship and influence of each procedure on the recorded mortality figures.

The third section of the Handbook outlines the value of birth and death registration to individuals, public health authorities, the medical pro-

fession and other bodies. The balance of the text, Sections 4 and 5, is devoted to the present registration system in the United States, its organization and procedure, and to an outline of the development of registration in the United States.

Presentation of the 1938 revision of the International List of Causes of Death and an index thereto occupies the bulk of the handbook as appendix A. Special interest attaches to the nature of the index. It comprises only those terms regarded as desirable or acceptable in certifying the causes of death and its inclusion considerably enhances the usefulness of the Handbook as a whole for the certifying physician. This material, together with the section outlining certification procedure and the basis of cause of death practice, is the important highlight of the publication.

The remainder of the Handbook—appendices B and C—comprises a glossary, definitions of commonly used statistical terms and the rates commonly used in vital statistics, principles underlying the uniform Vital Statistics Act, a list of census bureau publications on vital statistics and a selected bibliography. A series of eight tables and four charts give some essential data on trends in population, birth and death rates, selected causes of death and life expectancy.

Dr. Dunn and his staff in the Bureau are to be congratulated on an effort which holds promise of doing much toward bringing the certifying physician and the statistical office closer together and of closing the gap between clinical opinion and recorded data on causes of death. Copies of the Handbook are available through the Superintendent of Documents at Washington for fifteen cents each.—*A. Hardisty Sellers, B.A., M.D., D.P.H.*

BOOKS AND REPORTS

Common Procedures in the Practice of Paediatrics. By A. Brown and F. F. Tisdall. Third ed. McClelland & Stewart, Toronto, 1939. 314 pages. \$5.00.

THIS is the third edition of a book by two outstanding Canadian authorities in paediatrics, a book which has long since served a wide field and filled a real need. As the title suggests, *COMMON PROCEDURES IN THE PRACTICE OF PAEDIATRICS* has not been designed as a text in the usual sense but rather as a guide to the commoner procedures in the treatment of diseases of children, particularly those methods employed in the medical department of the Hospital for Sick Children, Toronto.

A feature of the book is the space devoted to discussing many practical suggestions and hints to the mother, not found in standard text-books. Problems encountered by the physician from the birth of the child to adolescence are dealt with in succession. The book is a useful guide to the general practitioner and, as well, a valuable aid to the senior medical student. The chapters dealing with infant feeding, behaviour problems, intelligence tests, and the use of biological products in the treatment of communicable diseases will prove of assistance to the medical officer of health in his child hygiene and mental hygiene programs.

The chapters on vitamins, intelligence tests, and the use of sulphanilamide and sulphapyridine in the treatment of acute infections have been dismissed somewhat briefly, but in a work of this nature and of somewhat limited space, these phases cannot be dealt with in extenso. References are in some respects inadequate.

The several new sections added in this edition serve to bring the volume up to date. The book is written in a clear, concise and readable style and will be a worthy addition to the library of the medical student, the practitioner, and the medical officer of health.

Eric L. Davey

Non-Profit Hospital Service Plans.

By C. Rufus Rorem. *The Commission on Hospital Service*, 18 East Division Street, Chicago, Ill., 1940. Single copies, 50 cents; 4 to 10 copies, 25 cents; 11 or more copies, 15 cents each. 130 pages.

GROUP hospitalization is a development which public health workers cannot afford to ignore. Its scope and its objectives, on the contrary, are such as to be a means, in part at least, to an end in which health authorities are intimately concerned. Hospital care insurance has important significance in relation to a health service program for the population.

Few in America are as well able to speak with authority upon group hospitalization as Dr. Rorem. *NON-PROFIT HOSPITAL SERVICE PLANS*, a critical analysis of group hospitalization and a review of the origin, development and underlying principles and practice in the conduct of hospital service plans, is therefore welcome.

Four and a half million persons are now enrolled in non-profit hospital service plans in sixty communities in the United States—numbers which denote the remarkable growth which has taken place during the past six years. Canada is experiencing noteworthy developments in this and ancillary fields of medical care too, and Canadian workers will be much interested in this publication.

Dr. Rorem makes it clear in his preface that this publication is not a manual. "Its purpose is to summarize the historical, economic and professional aspects of service plans for such readers as the following: executives or employees of a plan who wish to obtain a general perspective of the administrative problems which have been and are being faced in other communities; hospital superintendents or trustees, particularly if they have recently been elected to the boards of directors of hospitals service plans;

physicians or laymen serving on special committees to investigate the possibility of establishing plans in their communities."

In twelve chapters the author reviews the fundamental issues in and the essentials in the historical development of hospital service plans. A discussion of the approval program of the American Hospital Association, standards for approval, legal aspects of hospital service plans, community sponsorship and control, follows. Succeeding chapters are devoted to the economic basis of subscription rates and certain of the problems involved in dependent coverage, a discussion of the nature and scope of subscriber's and hospital contracts.

The twelve-page section on organization, accounting and statistics is most valuable indeed, bringing together a terse digest of basic principles and facts. Appendices containing supplementary data such as a Model Enabling Act, classification and definitions of account titles and definition of statistical terms, complete the text.

While the reference material and considerable of the discussion concerns American experience, Canadian workers could find no better source of material in digest form than this; indeed the great body of the text is concerned with general principles and basic fundamentals which are universal in application.

Hospital executives and trustees, as well as all physicians and laymen having responsibilities as members of special committees concerned with the investigation or establishment of hospital service plans, will find this document of great value. The information is authoritative and well presented.

A. H. Sellers

Standard Methods of the Division of Laboratories and Research of the New York State Department of Health. Published by The Williams & Wilkins Co., Baltimore, Md., 1940. 642 Pages. \$7.50.

THIS is the second edition of this book. The first edition appeared in 1927 and consisted essentially of the precise detailed directions provided for the guidance of the laboratory staff in all the various technical procedures. This new edition brings up to date these directions, which have been thoroughly revised and improved. Methods of general wide applicability have been condensed into one section in order to save space by avoiding repetition and to permit the addition of new material and the expansion of old where necessary. The book now consists of sections dealing with general laboratory procedures; preparation of media, glassware and diagnostic outfits; diagnostic procedures, bacteriological and serological; sanitary and analytical chemistry; antitoxin, serum and vaccine laboratories; administration; research, publications and library department.

One can find minor items which are open to criticism: for example, it is surprising to read that stock cultures are still used in the preparation of pertussis vaccine; but the whole work is excellent. Generous use of illustrations aids greatly in the description of technical procedures and apparatus. The scope of the book is obviously very comprehensive and the material presented the result of long experience and thought. There are hints and suggestions in these pages for established laboratories while for young laboratories a manual such as this should prove invaluable to the working-out of an orderly-efficient system.

F. O. Wishart

CURRENT HEALTH LITERATURE

The Treatment of Gonorrhoea by Chemotherapy

In a series of 500 cases of gonorrhoea at the Toronto General Hospital 36 per cent cures were obtained by the use of sulphanilamide. A subsequent series of 252 cases was treated with daganan by a routine of 3, 4, 4, 3, 3 grams on successive days and cures resulted in 87 per cent in two and a half days. Some degree of toxic manifestation was present in all but only 2 per cent were unable to take the drug. Other compounds were tested in smaller series of cases, some giving definite promise of good results while others were found ineffective or too toxic. Sulfathiazol and solu daganan compared favourably with daganan and may prove of great value, particularly for those unable to take the latter drug.

D. R. Mitchell, C. H. Greig and J. L. Uren, *The Treatment of Gonorrhoea by Chemotherapy*, Canad. M.A.J., 1940, 42: 533.

Recent Knowledge of the Incidence and Control of Cerebro-Spinal Fever

THIS paper deals with the epidemiology of cerebro-spinal fever with particular reference to the outbreak in Great Britain during the present year. The incidence of cerebro-spinal fever in Great Britain is discussed since it became notifiable in 1912. In the present outbreak 5,093 cases were notified in England and Wales during the first thirteen weeks of this year, the peak of the outbreak appearing in the week ending March 2nd. This epidemic from an analysis of the records is clearly the largest in the history of the country. Geographical distribution shows that every county was affected, with industrial cities producing the largest number of cases. It is estimated that the average fatality rate in the present epidemic is 24 per cent although there is much variation between different areas.

Many features of cerebro-spinal fever are discussed by the author,

such as the past experimental attempts at prophylaxis by vaccines and other active immunization measures. A statistical analysis of eight series of observations is given and it is shown that in only two of the eight could it be said that chance alone could have caused the difference in the incidence of cerebro-spinal fever in the inoculated and in the control groups respectively. The present widespread outbreak has given unusual opportunities for the testing of chemotherapy and the results so far obtained have been most encouraging. It appears that sulfa-pyradine is thus far the drug of choice. General means of prevention are discussed with reference to the present conditions of war, emphasis being placed on the practicability of reducing the density of the population in air-raid-precaution depots.

This paper is a splendid review of the subject and brings up to date our knowledge of the various aspects of cerebro-spinal fever.

E. Ashworth Underwood, *Brit. M.J.*, 1940, May 11, 4140.

A Study of Two Hundred and Forty Breast-fed and Artificially Fed Infants in the St. Louis Area

THE results obtained in this study again emphasize the desirability of breast feeding for infants in at least two important aspects, namely the incidence of diarrhoea and of rashes. In the breast-fed group diarrhoea occurred in 16.2 per cent and in the groups on various types of artificial feeding the incidence ranged from 33 to 53 per cent. Rashes occurred in 9.3 per cent of those receiving breast milk and in from 12 to 18 per cent of those on artificial feedings. Other data contrasting the relative merits of various artificial feedings as related to the incidence of colic, infectious rashes and diarrhoea are presented.

Edith C. Robinson, *Am. J. Dis. Child.*, 1940, 59: 1002.

